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[ORIGINAL ABSTRACT FROM SPECIAL CORRESPONDENT.]

ON THE PRODUCTION OF VERY LOW TEMPERATURES.

At a session of the Berlin Pharmaceutical Society held on June 4th, Mr. Raoul Pictet, of Geneva, read a paper on the production of temperatures below —100° C. We have translated the most interesting portions of it from the report of our correspondent.

It is not very long ago that a temperature of —20° C. was considered the limit of cold which could be reached [and maintained technically] in practice. At the present time we are able to attain temperatures below —200° C., and even to work with them for technological purposes. Not only has our knowledge of physics been thereby enlarged, but we are enabled to undertake entirely new chemical operations.

The principle of the method by which such low temperatures are obtained is, of course, the well-known physical law that heat is consumed when liquids evaporate. Water boils at +100° C., ether at 35° C., sulphurous acid at —10° C., and nitrous oxide at —100° C. If a liquid is made to boil by diminishing the pressure it is under, heat is converted into potential energy of the gas produced, and the surrounding body is cooled to a temperature directly proportional to the depression of the boiling point. The problem, therefore, appears very simple. In order to produce a low temperature it is only necessary to evaporate a liquid of correspondingly low boiling point. If we, for instance, take nitrous oxide gas, we would obtain a temperature of —100° C. But since it evaporates very rapidly, even a large volume of it would be soon consumed and the operation would have to be interrupted. In order that it may be continued for some time, it is necessary that the escaping gas be continually re-collected and again compressed to a liquid. But this would be very difficult, since it would require a greater pressure than ordinary machines are able to bear. The task appears like having to pump water from a very deep shaft. If it were attempted to do so by a single pump, the latter would have to work against a pressure which the valves and pipes would be unable to stand for any length of time. But if the depth of the shaft is divided into several sections, each provided with a separate pump, the problem becomes easy to solve. Although this example is not entirely analogous to the transmission of motion by heat, it is much more so in the case of cold. The object is here accomplished by dividing the range between the existing temperature of the air and the low temperature we wish to attain into three parts, each of which is provided with its own machine. The *first* one operates by the evaporation of the so-called Pictet's liquid, a mixture of liquefied sulphurous and carbonic acid. This liquid is conveyed, by means of a pump, into an evaporating chamber, in which the temperature may thereby be depressed to —83° C. At the same time the machine draws off the gases and reliquefies them in a condenser under a pressure of 2 atmospheres. The whole circuit is therefore closed and operates without material loss, there being 1 kilo of condensed vapor collected for every kilo of liquid conveyed to the cooling chamber. Inside of the latter there is a tubular space into which the substances which are to be cooled are introduced. Their heat or caloric is there converted into the potential energy of the resulting vapor of the refrigerating liquid, and this vapor, pumped into the condenser, is again reduced to liquid. Hence the water which keeps the condenser cool may be said literally to wash the heat withdrawn from the substance to be cooled out into the sewer. In exactly the same manner is operated the second step of the process, in which liquefied nitrous oxide is used as cooling liquid. The gas is kept stored in large gasometers, from which it is pumped by a second engine into a condenser which has been already cooled during the preceding operation to — 85° C. At this temperature a comparatively low pressure suffices to liquefy the gas. When it enters, as liquid, into the evaporating or cooling cylinder from which its vapor is pumped back into the gasometers or gas-holders, it lowers the temperature to —135° C. If it is now desired to apply the third stage, in which liquefied atmospheric air is used, there will be required not only the cold already established by the second stage, but also a high pressure. When air has been compressed at 200 atmospheres (at 3,000 pounds per square inch), and it is then cooled to —135° C., the pressure sinks to 75 atmospheres (1,025 pounds per square inch). After this any desired additional quantity can be pumped into the receiver without the pressure being increased, which is a certain sign that the air has been converted into a liquid. By the vaporization of liquid air a temperature of —200° to —213° C. may be attained. The lowest limit actually attainable under any circumstances is not very far below this. It might be possible, perhaps, by means of liquefied hydrogen gas, to go still further, perhaps as far as —255° C., but between the lowest temperature attainable to man and the *absolute* zero point [which, on theoretical grounds, lies at — 273° C.] there will always remain a certain interval due to the influence of radiation. For it has been found that even the most sluggish vibrations of the "ether," which correspond to the lowest temperatures, are propagated almost without any hindrance, even through the poorest conductors of heat. One would suppose that a packing with cotton to the depth of 1 meter (39⅓ inches) would prevent radiation from the cooling cylinders, but it is as good as no packing at all. A cylinder of 1.25 meters in height and 0.21 meter in diameter, cooled to —80° C., absorbs every hour 600 calories [1 calorie is equal to the amount of heat which 1 Kgm. of water must absorb to raise it from 0° to 1° C.] by radiation, no matter how carefully the cylinder may be wrapped. Hence the task of removing, in form of gases, the immense quantities of heat which would enter the cylinder at the low temperatures above mentioned, would be about equivalent to that of trying to dig a hole in the ocean with a perforated spade. Thousand horse-powers would not be able to pump away enough gas.

But even without attaining the utmost limits, there is opened to us, through the method just described, and the last stage of which is only operated for scientific purposes, a wide field of new observations and facts. It is now at least possible to reach and maintain, with the greatest ease, in any laboratory a temperature of —100° C., and to make experiments under it. All determinations heretofore made at higher temperatures, and all laws [involving temperature] which so far could only be tested at higher temperatures, must now be determined or tested anew.

During such investigations we constantly meet with new phenomena.

Recently it was suggested to me by Prof. O. Liebreich that chloroform, which it is so difficult to prepare in a perfectly pure state, could possibly be deprived of all impurities by freezing (that is, crystallization). On trial

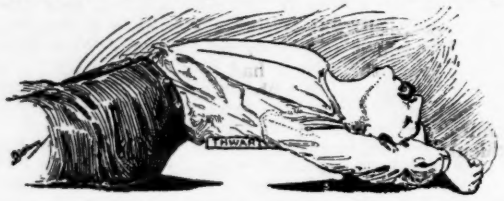
this was found to be unexpectedly easy. Since then I have subjected chloroform obtained from various factories, good and bad, to crystallization by cold, and, after removal of the mother liquid, have always obtained a notably purer product. The chromic acid test [which the author showed to the audience as applied to the best Edinburgh chloroform made by Duncan, Flockhardt & Co., and to chloroform purified by freezing] proves the absence of alcohol, including traces of aldehyde and other impurities. . . .

As an example of how entirely accidental discoveries have influenced the direction of my labors, I will report to you a remarkable phenomenon connected with *diffusion*. Being engaged with the investigation of Regnault's data regarding the density of gases, it occurred to me to make the measurements on a much larger scale, in order to eliminate errors as far as possible. I had india-rubber balloons made of about 1 meter in diameter, by means of which I obtained very exact results, completely agreeing with Regnault's values. But when I attempted to fill such a balloon with the vapors of a mixture of sulphurous and carbonic acid gas, it remained flat, and the odor of the gas was noticeable as if the balloon had been pierced with holes. After I had made sure that the latter was not the case, I tried several others with the same result. I found that sulphurous acid gas diffuses through caoutchouc [rubber] membranes with great energy. [The author showed this before the audience by experiment.]

The practical application of this is that sulphurous acid gas is the only efficient disinfectant for articles composed of or wrapped in rubber. During the cholera epidemic of 1882, public disinfection at the French and Swiss border was accomplished by means of Pictet's liquid. The articles were placed unopened in a room in which the liquid was allowed to evaporate. After a few hours they were completely disinfected.

RESUSCITATION FROM DROWNING.

THE Brooklyn *Medical Journal* draws attention to a novel but very simple and easy method of resuscitating drowned persons, which was recently communicated by Dr. E. J. Harvey, and by which the life of a young man was saved at Red Bank, N. J. The young man, together with his father, was out boating, when the boat became upset, the father being drowned, while the son was rescued after having for some time ceased to give



any apparent signs of life. Dr. Harvey happened to be out in a boat likewise, and succeeded in getting the body of the young man into his boat. The method of resuscitation adopted by him is one particularly useful while the body is still in the boat, inasmuch as it will do away with any danger from delay.

Dr. Harvey thus describes the method:

"When I reached the man I dragged him in at the bow—the bow or stern being the proper places to get weights into boats with the least danger of capsizing. When brought into the boat he had been submerged from three and a half to four minutes, and was entirely relaxed and unconscious; respiration had ceased and the face and lips were livid. He was at once placed upon his back, his shoulders on a thwart, his neck unsupported, and the back of his head resting upon the bottom of the boat, some five inches below, the upper surface of the thwart supporting the shoulders. The arms were extended beside the head, as in the Sylvester method. The clothing was removed from the neck. The position was something like that shown in the engraving.

"As soon as the head was thus depressed, a quantity of water poured from the mouth and nostrils; this flow of water was increased by lifting the shoulders from the thwart and still higher above the level of the head. When the flow stopped, the patient began to gasp; his shoulders were then replaced on the thwart. Breathing was gradually re-established. At first a good deal of foam and mucus obstructed and issued from the mouth and nostrils, and were wiped away; in a short time they ceased to form.

"It must have been half a minute after getting him aboard when the patient began gasping. It was my intention to use the Sylvester method of artificial respiration; but as the respiratory efforts continued and increased in frequency, I allowed the arms to remain extended and did not flex and compress them against the chest.

"As soon as respiration was firmly established, though stertorous, the unconscious patient was brought ashore and got into bed. He was then put in the care of his family physician. I am told that he did not recover consciousness for five hours after the accident, and that hypodermic injections of stimulants, etc., were used.

"He is about thirty years of age, of medium weight and size, and was not in very good health nor well nourished at the time of the accident."

Methods of Analysis of Fermented Liquors.*

[*As adopted by the Association of Official Agricultural Chemists of the United States for* 1890–1891.]

1. *Specific Gravity.*—This determination is made with a pycnometer, or a Westphal balance controlled by a pycnometer. Temperature, 25° C.

2. *Alcohol.*—One hundred cubic centimeters of wine at 25° C. distilled (preferably in glass) give + cubic centimeter alcohol.

3. *Extract.*—Fifty cubic centimeters of wine (at 25° C.), in case of sweet wines a less amount, are evaporated in a platinum dish on the water bath to a proper consistence, and then dried in a drying oven at 100° C. to constant loss of weight. Constant loss of weight is assumed when three weighings, with equal intervals between the first and second and second and third, give equal differences between the successive weighings. Weighings are to be made at intervals of fifteen minutes.

(NOTE ON THE EXTRACT DETERMINATION.—So far as I am aware, no satisfactory method has been given for the determination of the extract of wine. I think that the method of the Bavarian chemists is, on the whole, the best. As the object is for purpose of comparison with some standard, we cannot do better, I think, than to follow the standard most generally adopted. I have in mind, when the new chemical laboratory of the University of California is fitted up, to make some experiments on the determination of this extract in a vacuum at a moderate temperature. I should modify somewhat the method of Gautier. However, until some better method has been established, I believe the method given will be most satisfactory.)

4. *Acidity* (total acid constituents of the wine expressed as tartaric acid).—If carbonic acid is present, expel by shaking. Titrate with dilute alkali solution. The neutral point is determined by adding a drop of solution to delicate litmus paper.

5. *Volatile Acids* (expressed as acetic acid).—Distil in a current of steam, and titrate the carefully condensed distillate with standard alkali (decinormal).

6. *Glycerin.*—(1) This is determined in dry wines as follows: The alcohol is driven off from 100 C.c. wine, lime or magnesia added, and the whole evaporated to dryness. The residue is boiled with 90-per-cent alcohol, filtered, and the filtrate is evaporated to dryness. This residue is dissolved in 10 to 20 C.c. alcohol, 15 to 30 C.c. ether added, and the mixture allowed to stand until it is clear. It is then decanted from the sticky precipitate into a glass-stoppered weighing bottle, evaporated to constant loss of weight, and weighed.

(2) The following method is employed for sweet wines: One hundred cubic centimeters wine are measured into a porcelain dish, and evaporated on the water bath to a syrupy consistence, mixed with 100 to 150 C.c. absolute

* From Proceedings of the Seventh Annual Convention of the Association of Official Agricultural Analysts

alcohol, poured into a flask, ether added in the proportion of 1½ volumes to each volume of alcohol used, the flask well shaken and allowed to stand until the liquor becomes clear. This is then poured off, and the residue again treated with a mixture of alcohol and ether. The liquids are mixed, the alcohol and ether driven off, the residue dissolved in water and treated as in (1).

(3) In all glycerin determinations it is necessary to take into consideration the loss of glycerin due to its volatility with water and alcohol vapor, and accordingly to add to the glycerin found 0.100 Gm. for each 100 C.c. of liquid evaporated.

(4) It is necessary to test the glycerin from sweet wines for sugar, and if any is present it must be estimated by Soxhlet's or Knapp's method, and its weight subtracted from that of the glycerin.

7. *Sugar.*—This is to be determined by Soxhlet's or Knapp's method. The presence of unfermented cane sugar is to be shown by inversion, etc. *Polarization.*—(1) The wine is decolorized with plumbic subacetate.

(2) A slight excess of sodic carbonate is added to the filtrate from (1); 2 C.c. of a solution of plumbic subacetate are added to 40 C.c. white wine, and 5 C.c. to 40 C.c. red wine, the solution is filtered, and 1 C.c. of a saturated solution of sodic carbonate added to 21.0 or 22.5 C.c. of the filtrate.

(3) The kind of apparatus used and the length of the tube are to be given, and results estimated in equivalents of Wild's polaristrobometer with 200-Mm. tubes.

(4) All samples rotating more than 0.5 degree to the right (in 200-Mm. tubes, after treating as above) and showing no change, or but little change, in their rotatory power after inversion, are to be considered as containing unfermented glucose (starch sugar) residue.

(5) Rotatory power of less than 0.3 degree to the right shows that impure glucose has not been added.

(6) Wines rotating between 0.3 degree and 0.5 degree to the right must be treated by the alcohol method.

(7) Wines rotating strongly to the left must be fermented, and their optical properties then examined.

8. *Tannin.*—Determine with Neubauer's permanganate method.

9. *Potassic Bitartrate.*—The determination of potassic bitartrate as such is to be omitted.

10. *Tartaric, Malic, and Succinic Acids.*—(1) According to Schmidt and Hiepe's method. (2) Determination of tartaric acid according to the modified Berthelot-Fleury method. (3) If the addition of 1 Gm. finely powdered tartaric acid to 100 Gm. wine produces no precipitate of potassic bitartrate, the modified Berthelot-Fleury method must be employed to determine free tartaric acid.

11. *Coloring Matter.*—(1) Only aniline dyes are to be looked for. (2) Special attention is to be paid to the spectroscopic behavior of rosaniline dyes as obtained by shaking wines with amylic alcohol before and after saturation with ammonia.

12. *Inorganic Matter* (ash).—Burn in ordinary manner in flat platinum dish at as low a heat as possible; repeated moistening, drying, and heating to redness are advisable to get rid of all organic substances.

13. *Citric Acid.*—Presence to be shown by a qualitative test, as baric citrate.

14. *Sulphuric Acid.*—To be determined in the wine after adding hydrochloric acid.

15. *Chlorine.*—To be determined in the nitric acid solution of the burnt residue by Volhard's method.

16. *Lime, Magnesia, and Phosphoric Acid.*—These are determined in the ash fused with sodic hydrate and potassic nitrate, the phosphoric acid by the molybdenum method.

17. *Potash.*—Either in the wine ash, as the platinum double salt, or in the wine itself by Kayser's method.

18. *Gums.*—Presence shown by precipitation by alcohol; 4 C.c. wine and 10 C.c. 96-per-cent alcohol are mixed. If gum arabic has been added a lumpy, thick, stringy precipitate is provided, whereas pure wine becomes at first opalescent and then flocculent.

19. *Sulphurous Acid.*—One hundred C.c. of wine are distilled in a current of carbonic acid after the addition of phosphoric acid. The distillate, carefully condensed, is oxidized with bromine, and the amount of H_2SO_4 determined.

ABNORMAL CONSTITUENTS OF WINES.

Mannite.—When present in any considerable quantity it can be detected by simply allowing the wine (a few drops will be sufficient) to evaporate spontaneously upon a glass slide or plate. The mannite will crystallize in a characteristic stellated form, which can be recognized at a glance. It should be allowed to stand twenty-four to forty-eight hours. When the quantity is small, extract the residue evaporated nearly or quite to dryness with boiling 80-per-cent alcohol. Evaporate this extract to dryness, and extract with 95-per-cent boiling alcohol. The mannite, if present in any quantity, will separate out in part upon cooling. If allowed to evaporate spontaneously the characteristic stellated crystals can be obtained.

Lactic Acid.—This will be found in the alcohol ether extract of evaporated residue, and can be recognized by the usual tests. It may be determined by titration with standard alkali. It may be necessary to take larger quantities of the wine for this investigation.

In diseased wines butyric acid may be tested for in the portion of volatile acid.

Volumetric Estimation of Acetates.*

BY CLAUDE C. HAMILTON, M.D., PH.G.

THE quantitative analysis of the salts of lead by addition of volumetric solution of oxalic acid till no further precipitation is produced after filtering a portion of the mixture and adding more oxalic acid to the filtrate, is a source of great annoyance to the beginner in volumetric analysis. The same is true of the estimation of acetates by ignition and titrating the resulting carbonate with volumetric acid. Each of these processes, while accurate, is very tedious, and the young pharmacist loses interest in the anticipation of the results of his analysis long before his work is finished.

While the analytical chemist will find these or still more tedious methods to serve him best, the pharmacist will find methyl violet as an indicator to answer his desires in these cases for speed and accuracy. Methyl violet has been used for the detection of mineral acids in vinegar by the production of a blue or green color; when only acetic acid is present its color remains unchanged.

Now, if we add a mineral acid, say sulphuric, to an acetate, free acetic acid is liberated, while the sulphate of the metal is formed. There can be no free sulphuric acid present till all the acetate has been decomposed; so if we had added methyl violet it would have remained violet till all the acetate had been acted upon, and then turned blue or green with the addition of one more drop of sulphuric acid. By measuring the quantity of sulphuric acid required to produce the blue color, we can calculate the amount of acetate present in the sample.

Let us take an example, making our notes in "form":

Analysis No.....

Estimation of $Pb_2O(C_2H_3O_2)_2$ in Liquor Plumbi Subacetatis, U. S. P., containing 25 per cent.

Amount weighed: 10 Gm.

Indicator: Methyl violet.

$$2H_2SO_4 + Pb_2O(C_2H_3O_2)_2 = 2PbSO_4 + 2HC_2H_3O_2 + H_2O$$

$$4 \mid 196 + 548 = 4000 \text{ C.c. } \tfrac{N}{2} \text{ acid}$$

$$49 + 137 = 1000 \text{ " " "}$$

$$0.137 = 1 \text{ " " "}$$

18 C.c. of $\frac{N}{2}$ acid required to produce blue color.

$18 \times 0.137 = 2.466$ Gm. of $Pb_2O(C_2H_3O_2)_2$ in 10 Gm. weighed

hence 24.66 Gm. of $Pb_2O(C_2H_3O_2)_2$ in 100 Gm., or 24.66 per cent.

The acid must be added from the burette at the rate of about 85 drops per minute, and the solution of the acetate kept at a boiling temperature. Any amount of free acetic acid can be present, or a mineral salt not acted upon by acids (as sulphate, etc.); but the process will only esti-

*Paper read at the annual meeting of the Missouri Pharmaceutical Association.

mate acetate. It is applicable to all official acetates except acetic ether, which is not decomposed by acids, and acetate of morphine, which is liable to contain free alkaloid, causing a considerable error as to the amount of alkaloid actually present.

The turn of color from violet to blue is more distinct by gaslight than daylight, as violet has a reddish color by the former, which immediately disappears when the blue forms. In titration by daylight the turn can be seen readily by placing white paper behind the beaker containing the solution of acetate.

Ten C.c. of the $\frac{N}{2}$ sulphuric acid should exactly neutralize 10 C.c. of volumetric solution of soda U. S. P.

Methyl violet (penta-methyl-parafuchsin, $C_{19}H_{13}N_3(CH_3)_5$) has lately been introduced as an antiseptic in treatment of diseases of the eye by Dr. F. B. Tiffany, of Kansas City, for whom I have examined several samples for arsenic, but none contained that poison.

I append a table which will aid the operator in making these estimations without the use of equations. Dissolve the weight named of the salt in water, add methyl violet solution (5 drops of a 1-per-cent solution in dilute alcohol), heat to boiling, and let the acid flow in from a burette till the violet color is changed to blue; then calculate the amount of acetate.

	Weigh.	Each C.c. of acid indicates of acetate.
Plumbi Acetas	9.46 Gm.	2 per cent.
Liquor Plumbi Subacetatis	13.7 "	1 " "
Potassii Acetas	4.9 "	2 " "
Sodii "	3.4 "	4 " "
Zinci "	5.92 "	2 " "
Liquor Ammonii Acetatis	38.5 "	2 " "
" Ferri "	23.29 "	1 " "
Tinctura " "	23.29 "	1 " "

Avicenna, "The Prince of Physicians," died some nine centuries ago, aged fifty-eight years. It is now proposed by the Berlin physicians to erect a monument over his neglected grave. The proposition is most creditable to the historic sense of the profession, and we hope that the learned gentlemen of Berlin who are initiating the movement will be successful in it.

Avicenna, M.D., was born about 1000 A.D., "in that delightful Province of the Sun," Khorassan, and he lived an interesting and variegated life. The doctor was a good deal of a politician, but he did not have a steady "pull" with the authorities. He got himself appointed grand vizier, but was shortly deposed, imprisoned, then reinstated, and finally deposed again and banished the country. He was a gentleman evidently of great but erratic talents, and is reported to have looked too much on the wine when it was red in the cup. He wrote a very good treatise on practical medicine, called the "Canon," which was used as a text book by medical students for several hundred years, and which must have run through a good many editions.

Dr. Avicenna was a brilliant man beyond any doubt, and ought to have a monument. But so, perhaps, ought Rhazes, Averroës, Albucasis, Avenzoar, and especially Honain, who, for true moral worth, perhaps exceeded them all. If, therefore, we undertake to honor the memory of the Arabs, it might be wiser to have a conjoint tablet and put on all the names. As soon as our American brethren have finished their monument to Dr. Rush, we trust they will take up the Arabs.—*Med. Record.*

The Borax Fields of South America.—The appearance of an inland sea in California is causing great anxiety regarding the supply of borax and boracic acid. Mr. Robottom, a gentleman who is well informed upon the subject, says that, if the Californian supply should fail, there is sufficient crude borax in Chili, Peru, and Bolivia to supply the markets of the world. One deposit which Mr. Robottom visited on the borders of Chili and Bolivia he describes as being 26 miles in length and from 3 to 6 miles in width. The high Andes and many of the valleys of these districts are, according to Mr. Robottom, covered with borax.—*Dalziel.*

How to Keep Surgical Needles from Rusting.

SINCE many pharmacists have to keep a supply of surgical appliances, among which the various needles are not an inconsiderable item, it will interest them to know what is regarded by experienced persons as the best way to keep them from rusting.

As long as they are kept in the original papers, and not handled by the fingers, they will usually keep well, even without a preservative. But where needles are often called for, and where the physician or surgeon prefers to *see* the different needles before he selects what he wants, it is generally preferable to keep at least part of the stock loose in little drawers, compartments, or other convenient receptacles.

In our own experience—which has been rather extensive, so far as surgical needles are concerned—we have found that the surest way of keeping them from rusting, and yet always accessible, is to preserve them under a layer of colorless vaseline oil (albolene). We use japanned tin boxes, having suitable compartments for the various kinds of needles, each provided with a well-fitting lid. Each compartment contains one kind of needle, and all compartments, which communicate with each other through a few holes near the bottom of the dividing walls, are about half-filled with albolene, in place of which any other colorless or pale-colored vaseline or paraffin oil might be used. They are taken out with pincers and laid on blotting paper, when the excess of oil soon disappears. The oily coat remaining on them does no harm, even if it is not removed when using the needles.

Others use different methods. Some keep the needles between oiled paper or oiled chamois; others rub them with resin cerate or mercurial ointment, etc.

Recently alcohol has been recommended by Dr. Robert H. M. Dawbarn, who writes in the New York *Medical Journal* as follows: It would be an interesting point to determine how many of your readers are agreed regarding the best way of keeping their various surgical goods and chattels ready for instant use. In talking with other surgeons I find many opinions about it.

As to needles, for instance. I think the majority, after sterilizing them by heat, try to keep them dry. Dry sterilizing at the usual temperature is apt to injure their temper and cause subsequent bending during use; boiling or steam, to induce specks of rust. Rust, too, results from occasional subsequent exposure to air; and if cotton or cloth is used, it attracts moisture. Should a film of vaseline or oil be applied as a protective, this causes dust to cling and requires fresh cleansing before use. Glycerin I have tried and found wanting. In it, hygroscopic as it is, the needles do not remain entirely untarnished. They finally turn black.

For the past year I have been pleased with the results of a new plan—new to me, that is, though very probably not to others. This is simply to keep my needles in alcohol. For extreme safety against rust I use absolute alcohol; but the commercial article would probably be efficient. At least, some needles which I have kept in common alcohol for a month as an experiment are as bright as ever.

Upon buying the needles I immerse them in benzin to remove grease. Then, after running them through a towel, I plunge the point (a cutting-edge Hagedorn) into a bit of cork of the size of a pea—to avoid dulling from jolting—and finally, with their corks, they are put and kept in a wide-mouthed, glass-stoppered bottle filled with absolute alcohol.

After use I sew through a thick, wet, soapy towel repeatedly, cleanse the eye with a thread, immerse in benzin, and finally replace in the alcohol. This is certainly an efficient disinfectant, besides being an excellent protector against rust.

By the bye, I long ago gave up using (save in bowel work) any other than Hagedorn *self-threading* needles, which are a decided comfort and, when properly made, do not cut the thread.

Mannite is reported to be much used in the tropics as a laxative. Mannite is the sugar contained in manna, and is readily prepared in a pure state.

Scheme for Water Analyses.

THE following scheme, recast by us, is that devised by Th. Stillman (*Chem. News*, 1890), and is much in use both here and in Europe.

Evaporate 2 liters of the water in a platinum capsule gradually on a water bath to dryness, place the capsule in a drying oven, heat during half an hour to 105° C., and weigh the residue (A).

Next heat the capsule to dull redness, cool and weigh again the residue (B).

The loss of weight between A and B represents the organic and volatile constituents.

Next warm the residue B with 15 C.c. of strong hydrochloric acid, add 25 C.c. of distilled water, heat to boiling, and filter, through an ash-free filter, into a 100-C.c. flask, wash the filter, containing residue C, well, and make up the filtrate (*c*) with water to 100 C.c.

The residue C, upon the filter, consists of insoluble matter, silica (SiO_2), aluminum silicate ($SiO_2Al_2O_3$), or calcium sulphate ($CaSO_4$). It is dried, ignited, and weighed, next fused with soda in a platinum crucible, taken up with water, acidified with hydrochloric acid, and evaporated to dryness. The residue is again treated with water and filtered, yielding residue D and filtrate *d*.

The residue D is silica (SiO_2). It is ignited and weighed as SiO_2.

The filtrate *d* is rendered alkaline with ammonia, heated to boiling, and filtered, yielding residue E and filtrate *e*.

Residue E consists of alumina (Al_2O_3) and ferric oxide (Fe_2O_3). It is dried, ignited, and weighed, the result being given as alumina *and* ferric oxide.

The filtrate *e* is rendered alkaline with ammonia; after three hours the precipitate, consisting of lime (CaO), is collected on a filter, dried, ignited, and weighed. It is calculated into calcium sulphate ($CaSO_4$).

The filtrate *c*, amounting to 100 C.c., is divided into two portions, one of 75 C.c. (portion c_1), and the other of 25 C.c. (portion c_2).

The larger portion (c_1) is rendered alkaline by ammonia, heated to boiling, and filtered. There is obtained residue F and filtrate *f*. All weights finally obtained from this portion are multiplied by $\frac{4}{3}$ to get amount corresponding to 100 C.c.

The residue F consists of alumina (Al_2O_3) and ferric hydrate (Fe_2O_3). It is dried, ignited, and weighed together.

Filtrate *f* is rendered alkaline with ammonia, allowed to stand three hours, and then filtered. We obtain residue G and filtrate *g*.

Residue G consists of lime (CaO). This is dried, ignited, and weighed as CaO.

Filtrate *g* is evaporated to dryness in a platinum capsule, ignited (to drive off salts of ammonia), then boiled with water, the liquid filtered, and the filter well washed. We obtain residue H and filtrate *h*.

Residue H consists of magnesia ($Mg(OH)_2$). This is dried, ignited, and weighed as magnesia (MgO).

Filtrate *h* is transferred to a platinum capsule, a few drops of sulphuric acid added, the whole evaporated to dryness and ignited to a constant weight. The residue consists of sodium, potassium, or magnesium sulphate. It is first weighed, then dissolved in water, the solution made to measure 50 C.c., and then divided into two equal portions (*a* and *b*) of 25 C.c. each.

Portion *a* is mixed with a few drops of hydrochloric acid, then rendered alkaline with ammonia, and mixed with sodium phosphate solution. After three hours the precipitate is collected on a filter, well washed, dried, and ignited. The residue is magnesium pyrophosphate ($Mg_2P_2O_7$). This is calculated into magnesium sulphate ($MgSO_4$). The amount found is multiplied by 2, and then deducted from the total amount of the sulphates found in filtrate *h*. Finally, the amount of $MgSO_4$ [corresponding to the 50 C.c. of filtrate *h*] is calculated into magnesia (MgO).

Portion *b* is rendered faintly acid with hydrochloric acid and mixed with platinic chloride solution. The whole is evaporated, after addition of some alcohol, on the water bath to dryness, the residue treated with alcohol and filtered, so that the potassio-platinic chloride (K_2PtCl_6) is collected on the filter, upon which it is washed, dried at 100° C., and weighed. The weight found is calculated into potassium sulphate (K_2SO_4). It is multiplied by 2, and then deducted from the weight of potassium *and* sodium sulphate previously found in filtrate *h* (after deduction of the magnesium salt). The remainder is sodium sulphate (Na_2SO_4). Lastly, both the potassium and the sodium sulphates are calculated into potassa (K_2O) and soda (Na_2O).

The smaller portion (c_2) of filtrate *c*, amounting to 25 C.c., is heated to boiling, mixed with barium chloride solution, allowed to stand three hours, then the barium sulphate separated by filtration, washed, dried, and weighed. The amount is calculated into anhydrous sulphuric acid (SO_3) and multiplied by 4.

Carbonic acid in the original water is found by combining (by calculation) the chlorine and sulphuric acid with the bases, and then ascertaining how much carbonic acid is required to convert the remainder of lime and magnesia into carbonates (see below).

Chlorine is determined in the following manner: 250 C.c. of the water are evaporated to about 50 C.c. in a porcelain capsule. A few drops of solution of yellow potassium chromate are added, and the chlorine determined by titration with decinormal silver solution (1 C.c. = 0 0017 Gm. $AgNO_3$).

Notes.—The chlorine in the water is most likely combined with sodium. If there is more present than can be in combination with sodium, it may be combined with potassium, magnesium, or calcium. Sulphuric acid is considered as being in combination with alkali metals, unless these are already fully engaged by the chloride. In this case the sulphuric acid is reckoned to be in combination with magnesium or calcium. After all these combinations are calculated, the residuary calcium and magnesium are considered as combined with carbonic acid. The following tables show the quantities of the several constituents found in a certain water, and the combinations into which they were finally calculated:

Found:

	Gm. in 1 Liter.
SiO_2	0.0038
SO_3	0.0110
Cl	0.0062
K_2O	0.0033
Na_2O	0.0185
MgO	0.0165
CaO	0.0466
$Al_2O_3 + Fe_2O_3$	0.0020
Organ. Matter	0.0246
CO_2	0.0530
	0.1855
O in excess, corresponding to Cl	0.0021
Total	0.1834

Calculated into:

Sodium Chloride, NaCl	0.0154
Sodium Sulphate, Na_2SO_4	0.0141
Potassium Sulphate, K_2SO_4	0.0061
Calcium Carbonate, $CaCO_3$	0.0833
Magnesium Carbonate, $MgCO_3$	0.0338
Alumina + Ferric Oxide, $Al_2O_3 + Fe_2O_3$	0.0020
Silica, SiO_2	0.0038
Organic Matter	0.0246
Total	0.1831

Menthol in Hay Fever.

IN a note published in the *British Medical Journal* (July 18th, page 124) Dr. Lennox Wainwright states that he has found menthol, mixed with carbonate of ammonia and used as smelling salts, the most useful remedy that he has tried out of the great number that have been recommended from time to time. The patients say that all irritability disappears, and in many cases they get no return of the symptoms.—*Pharm. Journ.*

Testing Lard.

C. ENGLER and G. RUPP, of Karlsruhe, have recently reported (*Zeitsch. f. angew. Chem.*, 1891, 13) the results of their experiments upon pure and adulterated lard imported from the United States. They find the most reliable criterion to be *Huebl's iodine number*. In addition to this, they place the most reliance upon Becchi's test—boiling the fat with an alcoholic solution of silver nitrate; next upon the color produced by acetate of lead and ammonia (Labiche's reaction); and, lastly, Maumené's test, viz., the rise of temperature produced with concentrated sulphuric acid.

Regarding Becchi's test, the authors do not seem to be aware that it has been shown to give negative results of the presence of cottonseed oil in lard, when the cottonseed oil had been subjected to heat previous to its admixture with lard.

In the course of the paper the authors communicate a new method, devised by one of their assistants, Mr. Welmans, which is capable of detecting the presence, in lard, of vegetable fixed oils, provided they have not been previously subjected to chemical agents.

Welmans' test is the following: On shaking a solution of *pure* lard in chloroform with a solution of sodium phosphomolybdate in nitric acid, the color is not altered. In presence of fixed *vegetable* oils, however, the molybdic solution is reduced and rendered green, the color increasing in proportion to the percentage of the foreign oil present. On neutralizing the liquid with ammonia, the color changes to blue. No alteration is produced by the ammonia in the colorless liquids resulting with pure lard.

The authors found *pure* lard to yield the following results:

1. Huebl's iodine number (see below): 57.3 to 59.
2. Silver nitrate, either in alcoholic or in ethereal solution: no color.
3. Labiche's acetate of lead test: white mass.
4. Maumené's test, rise of temperature: 31° to 32° C.

Huebl's iodine number is a figure corresponding with the quantity of iodine capable of combining with the fatty acids, either free, or in their natural combination with glyceryl contained in the several fixed oils.

The directions of Huebl for finding the percentage of iodine taken into combination (the iodine number) are as follows (after Prescott, "Organ. Analysis"), commencing with preparation of the needful reagents: 1. *Iodine solution.* Of iodine 25 Gm. are dissolved in 500 C.c. of alcohol (free from fusel oil); of mercuric chloride 30 Gm. are dissolved in 500 C.c. of the alcohol, and this solution filtered if necessary; when the two solutions are united, and, after 6 to 12 hours standing, titrated with the standardized thiosulphate solution, and the standard noted. [This iodine solution has been found to be liable to much variation, if used immediately after being made. It is absolutely necessary to allow it to stand, as above directed, before titrating it.—ED. AM. DRUGG.]

2. *Thiosulphate (Hyposulphite) Solution.*—A solution of about 24 Gm. of sodium thiosulphate in the liter is made, and its iodine value accurately determined with a weighed quantity of freshly sublimed iodine. About 0.2 Gm. of resublimed iodine is placed in a small glass tube closed at one end and provided with a similar tube enough larger to serve as a cover, both tubes being previously dried and weighed. The iodine is heated in the inner tube, on a sand bath, until it melts, then covered with the outer tube, cooled in a desiccator, and weighed. The cover is now removed, and both tubes are placed in a stoppered flask containing 1 Gm. of potassium iodide (neutral and free from iodine) dissolved in 10 C.c. of water. When the iodine has dissolved, the solution of thiosulphate of sodium is added from a burette until the iodine color is reduced to a faint yellow, a little starch solution is added, and the titration completed to the extinction of the blue color. The iodine value of the thiosulphate solution is now written.

3. *Chloroform.*—The purity of chloroform is assured for this assay by digesting 10 C.c. of it with 10 C.c. of the iodine solution at ordinary temperature for two or three hours, and titrating to the extinction of the iodine with the thiosulphate solution, the stated quantity of which should be consumed.

4. *Potassium Iodide Solution.*—One part of pure iodide of potassium in 10 parts of water. It should be neutral in reaction, and should not contain any free iodine.

For the assay 0.2 to 0.3 Gm. of a drying oil, or 0.3 to 0.4 Gm. of a non-drying oil, or 0.8 to 1.0 Gm. of a solid fat, is taken in a close-stoppered flask of about 200 C.c., and 10 C.c. of the chloroform are added for solution. Of the iodine solution 20 C.c. are added in exact measure, and, if the mixture does not become clear after shaking, a little more chloroform is added. The quantity of iodine should be sufficient to leave a dark-brown color after one and a half or two hours' standing, the time to be taken for the reaction. In titrating the remaining excess of the iodine, 10 to 15 C.c. of the potassium iodide solution and, after shaking, 150 C.c. of water are added, when the thiosulphate solution is added, with shaking, until the color of both the aqueous layer and the chloroform layer is reduced to a pale yellow, when starch solution is introduced and the extinction of the iodine completed. For close results the iodine and thiosulphate solutions should be standardized just before or after the assay. The number of parts of iodine taken by 100 parts of the fat is known as its iodine number. Using a sufficient excess of iodine in the reaction, quite constant results are promised.

Succinate of Iron.

As succinate of iron has recently been revived as a remedy in jaundice due to the obstruction of the biliary duct by calculi, and also as a remedy in anæmia, the following working formula for a permanent solution, devised by Prof. W. T. Wenzell, of San Francisco, in 1880, will furnish a suitable form of the remedy. It is republished after the *Amer. Journ. Pharm.* (June, 1891).

Dissolve 50 grains of succinic acid in 3 fluidounces of water, neutralize nearly with ammonia, and dilute to 6 fluidounces. Transfer the solution to an 8-ounce bottle, add ½ fluidounce of the officinal Liquor Ferri Persulphatis, and agitate well. Transfer the mixture to a filter, and wash the precipitated ferric succinate thoroughly with distilled water. Next take 89 grains of citric acid, put it into a beaker, and add with stirring a sufficient quantity of ammonia water until the acid is dissolved and the solution neutral. Finally, transfer the moist ferric succinate to a porcelain capsule, add the solution of ammonium citrate, and dissolve, assisted by a gentle heat. The solution, when diluted to measure 6 fluidounces, will contain in a fluidrachm 2 grains of the ferric succinate or 5 grains of the double salt.

Attention having been called to the dark color of most samples of ferrous succinate solutions, the suggestion has been made that perhaps the ferrous carbonate employed in the usual method of manufacture of this salt is not entirely free from ferric salt, hence the dark color. In the same number of the *American Journal of Pharmacy* Mr. F. W. Haussmann writes that in some experiments which he has made to settle this question, a solution was prepared with the employment of recently precipitated ferrous carbonate, care being taken to prevent the formation of ferric salt as much as possible. The color of both solutions was identical, and on examination of a recently prepared solution little or no ferric salt was found. Hence it may be inferred that the dark color of the sample was not due to the presence of a ferric salt.

Cradine, a Vegetable Ferment from the Fig Tree.

MR. U. MUSSI has obtained a vegetable ferment from the leaves and branches of the fig tree (*Ficus Carica*). By making incisions therein, a white juice is obtained which possesses a peculiar odor, and, when mixed with water, deposits a sediment. The latter is soluble in presence of dilute acids and alkaline salts. From such solutions the new ferment has been prepared. It has been named *cradine.* It is said to act upon albuminoids, in presence of hydrochloric acid, much more energetically than pepsin. Even in alkaline solution it retains its activity. After digestion, the liquids are easily shown to contain much peptone.—*Pharm. Zeitsch. f. Russl.*

Obeah Poisons and Poisoners.

WE take the following from an interesting paper on this subject by Eug. Murray Aaron, Ph.D., in the *Scientific American* (August 1st):

There is probably no locality where Anglo-Saxon civilization is now waging so active a warfare in this direction as in the British West Indies.

There the colonial governments are brought face to face with the Obeahman, whose skill with native poisons is supplemented by a certain rude acquaintance with the Pharmacopœia, and whose sway over his debased followers is practically absolute.

In Jamaica, the largest of these colonies, the greater extent of the interior affords ampler refuge for these impostors, who naturally desire to secrete themselves far from the ken of the police inspection. To offset this immunity from detection the officers of the law are necessarily more constant in their vigilance, and good offices of an "island chemist" and his assistants are constantly before the public. The very presence of such an official, whose main duty it is to aid in the conviction of suspected poisoners, cannot fail of having a deterrent effect on those who have recourse to the poison cup and the envenomed poniard. Mr. John J. Bowrey, F.C.S., who has filled the position of chemist-in-chief for over twenty years, has made a special study of the ways of Obeah and the Obiman, and to him the science of toxicology is indebted for important discoveries.

Obeah, the worship and propitiation of the eternal snake as an emblem of evil, long ago degenerated into a series of obscene orgies among its West Indian followers. The original office of the priest of this superstition was the simple protection of his followers from evil. It afterward came to include the perpetration of secret crimes against the property and lives of their enemies. The poisoning of implements of warfare seems to have been the first step in this direction, as Dr. Tidy has pointed out. Following this came the poisoning of streams used by hostile tribes. From these collective forms of savagery it was an easy step to the use of poisons in individual cases. The earlier expedients probably are still in vogue in the tribal warfare of Africa, but in the West Indies the skill of the Obiman is only invoked to enable a follower to wreak his vengeance on the flocks, the family, or the person of a hated rival or secret foe.

The Obiman is an acknowledged adept in the use of poisons, and while his skill may awaken suspicion, it too frequently defies detection, even with the aid of accurate chemical analysis.

The Spanish and French West Indies afford a greater proportionate number of cases of these crimes among the negroes. In Hayti, especially, the practice undoubtedly reaches its highest development and is practised with the greatest impunity. But as these countries do not employ official toxicologists to aid in the identification of such cases, we must still look to the British West Indies, and especially to Jamaica, for the best opportunities to study Obeah poisons and poisoners. . . .

Another feature in the government of Jamaica which does much to foster Obeah pharmacy is the mismanagement, as it appears to be to the disinterested onlooker, of what is termed the Island Medical Department. With eight heads of departments, drawing fat salaries, and a force of forty-one district medical officers, with a good salary guaranteed in each case, the patronage of the department has become of great value. Without going into particulars which would not interest the reader, it suffices to say that the result is to bring into great demand the services of "bush doctors," as those uneducated charlatans are called who brew simples from the wild herbs at hand. This is not to be wondered at when we find that there is but one educated physician to every 12,300 inhabitants, by far the greatest proportion of whom are spread over stretches of wilderness, and what wonder that "bush physic" is all that these ignorant, neglected negroes ever receive? . . .

Nature in the tropics lends herself readily to the uses of the poisoner. On every hand abound vegetable products from which the deadliest poisons may be extracted by easy processes. Lobelia, nux vomica, belladonna, prussic and oxalic acids, urechitine, manchineel, and many other less known substances are all abundant. In the animal kingdom the potency of putrid blood, the venom of tarantulas, scorpions, centipedes, and more rarely serpents, is well understood.

Although no poisonous snakes are now found in Jamaica, their venom is sometimes procured from elsewhere.

Père Labat is of the opinion that it is serpent venom which renders the scratch of the finger nail so deadly. But other poisons are employed in this way.

A case of this kind came to my personal knowledge. The victim, on shaking hands with a supposed friend, afterward found to be a rival, was slightly scratched by a sharply pointed finger nail. Death ensued within a few hours, and it was proved that the poison employed was of vegetable origin.

Cases in which a scorpion has been found to have been boiled in coffee or other beverages are not infrequent. Yet scorpions are so commonly found secreting themselves in household utensils that death from this cause is seldom attributed to anything but accident. Among the many forms of animal putridity employed by poisoners, none is more highly prized than that taken from the intestines of the gecko lizard. This creature, stuffed, is a rare charm; its saliva forms an ingredient in many love potions, and its claws, worn on a string next to the skin, are reputed to ward off leprosy, syphilis, and other like ills.

Among the vegetable poisons, a dilute prussic acid is obtained from the kernel of the rose apple, oxalic acid from various species of *Oxalis;* and the manchineel poison, crudely distilled from the tree of that name, is one of the most deadly, both as a stomach and blood poison. Nux vomica and belladonna are well known to the Obeah pharmacists, and they are also familiar with antidotes to these and other rapid poisons.

Urechitine, a potent toxic agent extracted from the very common yellow Savannah weed, *Lobelia*, was recently discovered by Mr. Bowrey, and by him made known to science through the medium of the Royal Chemical Society of England. Yet there is reason to believe that this poison has long been employed by the Obimen.

For some years the students of this science have been convinced that the Obiman was in possession of some cumulative poison whereby the death of a victim could be so timed as to take place after any stated interval—a poison the administration of which practically defied detection. In urechitine such a poison has at last been found. Mr. Bowrey's experiments therewith have been most thorough. A cat given but $\frac{1}{1000}$ of a grain per day regularly for six weeks, at the end of that time suddenly died in the most violent manner.

The chances of detecting such infinitesimal dose either by taste or sight are *nil;* the opportunities for the administration of such a dose in coffee, cocoa, or soup are legion. The chances that the chemist has for bringing the users of such a subtle poison to justice are almost too slight to be worthy of consideration. Its very action is described as least likely to awaken suspicion.

A typical case, one that will be at once recognized as typical by all West-Indians, may be related in conclusion. A mistress discovered that her well-favored quadroon waitress was exerting an undue influence over the eldest heir to the paternal acres, and reproved her therefor. Reproof not sufficing, a case of *flagrante delictu* was punished by a whipping with a strap, unfortunately not applied to the youth but to the plump shoulders of the girl. The punishment was taken in grim silence, and, at its termination, some threat, indistinctly heard by others, was made, in which "Obiman" and "work de Obeah" were phrases. The next morning the mistress and her daughter, who took breakfast alone together, were seized with convulsions, and before medical aid could arrive were dead. Here was quite enough of the circumstantial to warrant the arrest of the girl, but further than that the case never went.

Ginseng Farm.—There is a ginseng farm at Summit Station, Onondaga Co., N. Y. It is owned and carried on by George Stanton.

The Oil of Rose Crop.

THE following is taken from an editorial contained in the *Chemist and Druggist:*

This year the rose crop has been unusually late. In that particular it has shared the fate of most other products of field and garden throughout Europe, but the rose tree has suffered more severely than many other economic plants on account of its extreme delicacy, which is wounded not only by the rigors of a severe winter, but suffers severely from spring frosts, mists, and excessive heat during the flower harvest. In normal seasons distilling in Southern Bulgaria commences on May 15th and lasts until June 15th, but this year distilling did not commence until May 26th; and as June 15th is always the closing day, the distilling operations had to be hurried on in a manner which greatly decreased the yield of the otto, an average of 4,000 kilos of flowers being required this season to produce 1 kilo of oil, against 3,000 kilos in ordinary years.

Statistics emanating from one of the most reliable firms in the trade show a total crop for the current season of 450,000 meticals (1 metical = 4.794 Gm.), or about 79,000 ounces English. That figure refers to the production of Bulgarian otto only, but up to the present time that is the only variety which need be considered for commercial purposes. The French otto of rose, although much dearer than the Turkish, is produced in comparatively insignificant quantities, while the cultures established by a German house in the neighborhood of Leipzig, and of which so much was written a few seasons ago, have not yet created that stir in commercial circles which the first reports of their magnitude led many to expect. Then there has been a good deal of talk lately about the extensive plantations alleged to have been laid out in Asia Minor by Mohammedan "exiles" from Bulgaria. It may be that some otto is obtained thence, but, if so, it probably goes straightway to Constantinople and is lost there in the general stock.

To revert to the Bulgarian yield, this crop of 450,000 meticals is said to warrant an advance in price of from 20 to 25 per cent at least, and, what is more, such an increment upon last season's rates is reported to have been actually paid to the Bulgarian distillers by the dealers. The latter have not as yet fixed their opening price for the season, a proceeding in which one or two large Constantinople firms usually play the leading part, the other dealers adjusting their prices upon the cue thus given them. From what we have been able to gather from one or two of the leading distillers, who have just made their accustomed annual visit to the principal European buying markets, it would seem that consumers will have to resign themselves to the necessity of paying a not inconsiderable advance upon the prices of last season. Nor need such an advance be grudged to the Bulgarian rose farmer, though in all probability he is not the link in the chain that will profit the most by the rise.

His occupation can hardly have been a very prosperous one for many years. About two years ago it was calculated that the rose grower, after paying wages, received about £10 per acre as the gross yield of his operations.

The average size of a plantation (though they vary widely in extent) is hardly three acres—minus the cow—and it may therefore be surmised that the problem how to make both ends meet is one of grim reality to the Bulgarian rose grower.

He, like so many others, is a victim of that great misnomer "overproduction." The season of 1872—the worst on record in Bulgaria—witnessed a rise in otto to about 33*s.* per ounce, and since that time scores of new cultivators, tempted by that alluring figure, have gone into the rose-growing business. Unfortunately for some of them, there has not been another absolutely bad harvest since 1879, and the last three or four seasons have even been unusually prolific. Since 1887 the crops have averaged about 90,000 ounces English; and even with a deficit of 20 per cent in this season as compared with 1890, the yield may still be called an almost normal one, and there is slight room for any advance in price beyond that already announced as practically inevitable. Assuming the correctness of the figures recently published by us from data supplied by a prominent dealer, it appears as if the district of Kezanlik, the most important of all the growing areas, has not produced quite so large a proportion of otto this year as formerly, though it may perhaps be rash to conclude therefrom that there is a tendency for the industry to direct itself towards the smaller centres, where, presumably, land and labor are cheapest.

Salicylbromanilide.

THIS synthetic compound, to which the proprietary name of *antinervin* has been given, is a combination of bromacetanilide and salicylanilide, and is supposed to possess the properties of antifebrin, bromine, and salicylic acid, without their unpleasant effects, and may consequently be supposed to have antipyretic, antineuralgic, and antinervine properties. It is a white, crystalline powder, having a rather pleasant, slightly acid taste, feebly soluble in cold water, but dissolves freely in hot water, alcohol, and ether.

Dr. C. S. Bradfute, who writes in the Cincinnati *Medical News* for June, 1891, states that the dose is from 3 to 10 grains, and is best given in the form of compressed tablets or in simple powders. Dr. Bradfute suggests that, for the sake of brevity, this compound be termed "salbromalide."

The claim has been advanced that salicylbromanilide is of value in diabetes, but Dr. Bradfute was not able to confirm this statement. It seems, however, that this compound is effective as a reliever of pain and those functional disturbances of the circulatory system which occur at the onset of acute diseases, and, although its power of reducing the temperature is undoubted, it should be given carefully in states of hyperpyrexia on account of its action on the heart.—*Ther. Gaz.*

Dermatol.

UNDER the name of "dermatol" a basic gallate of bismuth is being put forward as a substitute for iodoform. It is described (*Pharm. Zeit.*, June 20th, p. 386) as an extremely fine, non-hygroscopic, odorless, saffron-yellow powder, permanent in air and light, and insoluble in the ordinary solvents. On account of its insolubility, its antibacterial action is limited to the partwhere it comes into direct contact with the pus microbes, resembling in this respect iodoform. In addition to the direct antiseptic action of dermatol, it is claimed that dermatol has a desiccating influence, so that the development of bacteria is inhibited by the drying-up of their pabulum. The astringent action of the preparation is also said to influence the process of healing, whilst on the other hand it causes no irritation and is not absorbed. The preparation is further said to be valuable, when administered internally, in affections of the stomach and intestines, and it is stated that, as it is non-poisonous, doses amounting to 2 Gm. daily are well supported. The question has been raised why the pharmacist should be perplexed with such an unmeaning name as "dermatol" for a salt of bismuth, but the choice of the designation has been probably more influenced by the prospective profit of a manufacturer than considerations of the convenience of pharmacists.—*Pharm. Journ.*

Distillation of Essential Oils in Morocco.—The Sultan of Morocco has given his permission for the establishment of essential-oil works in his dominions. The essential oils will be subject to the following export duties: Caraway oil, 100 reals per quintal; thyme oil, 40 reals per quintal; peppermint oil, 40 reals per quintal; wormwood oil, 100 reals per quintal; arbutus oil, 20 reals per quintal. Distillation may only take place in towns such as ports, to the exclusion of the country districts. Merchants must confine themselves to the distillation of the five products mentioned above, to the exclusion of all others [!] Every other essence found in their possession will be treated as contraband goods and confiscated. A real is about 2½*d.* and a quintal 220.4 pounds.—*Chem. and Drugg.*

Testing Metallic Iron for Arsenic.

THE last German Pharmacopœia appended the following test for arsenic to *Ferrum pulveratum:*

"Upon 1 Gm. of powdered iron pour 15 C.c. each of water and hydrochloric acid: the gas given off and escaping through a narrow glass tube should not impart more than a brownish color, within five seconds, to a piece of paper impregnated with solution of lead acetate and held against it. On igniting the gas, and holding a plate of porcelain down upon it, no spots should make their appearance upon the latter. A portion of the acid solution, when covered with a layer of hydrogen sulphide solution, should not show a dark color at the point of contact. Another portion of the same solution, after being oxidized with nitric acid, and precipitating the iron by ammonia, should yield a filtrate which is not altered by hydrogen sulphide solution. On making a solution in nitric acid of that portion of the iron which has not been dissolved in hydrochloric acid, it should not be colored dark by hydrogen sulphide solution, nor colored blue by ammonia in excess."

Otto Sautermeister draws attention to a serious error in these tests. He was led to discover it by his inability to detect arsenic in iron, though this was *known* to contain it, or, rather, after it had been purposely added to the mixture of acid, water, and iron which gave off a current of hydrogen gas. Even as much as 0.1 Gm. of arsenious acid, added in one of the tests, failed to reveal its presence in the evolved gas.

On inquiring into the causes of this, the author found that, if *zinc* was added to the iron while being acted upon by hydrochloric acid, the escaping gas contained the usual arsenetted hydrogen. When the zinc was omitted, and iron alone was used, the arsenic was reduced to metal (as the author thinks) and was deposited with the undissolved portion of the iron. At all events, after washing the residue, this appeared as a jet-black, somewhat spongy powder, which is dissolved to a yellowish liquid when treated with hydrochloric acid in presence of potassium chlorate. Ferrous chloride alone is not capable of reducing arsenious acid to metal. On looking through the literature, the author found a passage in an old paper by Prof. Woehler, published in 1839, which showed that the reaction was known to the latter; but it seems to have fallen almost into oblivion.—After *Pharm. Zeit.*

The Influence of Cultivation upon Coca.

SINCE coca has been made an object of cultivation in India and Java, it has been noticed, not only that the percentage of alkaloids in the leaves has materially increased, care having been taken to choose the richest individuals for propagating purposes, but also that the nature and relative proportion of the different alkaloids have been considerably altered. The quantity of cocaine has by no means increased in proportion as the total quantity of alkaloids became greater. Indeed, it may be said to have decreased, and it is now found that even entirely new alkaloids are produced under the new conditions.

An interesting discovery in this direction has just been announced by C. Liebermann (*Berichte*, 1891, 2336), who received the material, obtained from a Javanese coca, from Dr. F. Giesel, the discoverer of the new alkaloid.

The particular kind of coca from which it was obtained contained about 2 per cent of total alkaloids, among which was, however, very little cocaine, while it contained about 5 per cent (of the total alkaloids) of cinnamyl-cocaine. The new alkaloid has turned out to be allied to, or identical with, one heretofore obtained from one of the varieties of tropine (known as pseta-tropine) artificially derived from atropine. While a relationship between the cocaine group and the atropine group had already before this been discovered by Liebermann and Einhorn, the present discovery of the new base throws an additional light upon this relationship, and will probably help to clear up what is still uncertain in regard to tropine.

The particular base discovered by Giesel and studied by Liebermann is benzoyl-pseta[ψ]-tropeïne [$C_5H_{14}NO$-(C_7H_5O)]. It is a strong base, very soluble in volatile solvents, optically inactive, and melts at 49° C.

Solution of Lactate of Quinine for Hypodermic Use.

M. PIERRE VIGIER draws attention to a solution of lactate of quinine which he proposed some six years ago for hypodermic use, but which appears to have remained practically unknown to the medical profession.

Lactate of quinine contains 78.26 per cent of the alkaloid. A solution of it, injected hypodermically, causes neither pain nor an abscess.

A standard solution containing 1 in 5 by weight is best prepared in the following manner:

Dissolve 21.5 Gm. (332 grains) of sulphate of quinine (representing 16 Gm. [247 grains] of the anhydrous alkaloid) in 500 C.c. (about 1 pint) of water with the aid of 27.5 Gm. (425 grains) of diluted sulphuric acid (1 of acid and 9 of water). Add 29 Gm. (450 grains) of water of ammonia; leave in contact during twenty-four hours, stirring from time to time. Wash the hydrated quinine with distilled water upon a filter, then mix it with 100 Gm. (1,540 grains) of warm water, keep it at a gentle heat on a water bath, and gradually add lactic acid until the liquid has a faint acid reaction, to produce which about 4.25 Gm. (65½ grains) of lactic acid (specific gravity 1.215) will be required. Lastly, allow to cool, filter, and add enough distilled water to the product to make it weigh 100 Gm. (1,543 grains).

On filtering there will usually remain a small quantity of undissolved matter, never exceeding 0.5 Gm. The author usually rejects this; but he adds that if an exact 20-per-cent solution of lactate of quinine is required, it is only necessary to increase the sulphate of quinine to 22 Gm., and the other substances in proportion.—After *Journ. de Pharm. et de Chim.*

[*Note by Ed. Am. Drugg.*—Of course an exact 20-per-cent solution would require more than this. It would be necessary to carefully collect the residuary matter on the filter, separate the alkaloid, wash and dry it so as to ascertain the exact amount of anhydrous quinine it contains, and then to take this into consideration when making the final solution, which would, therefore, be proportionately less than 100 Gm. But for ordinary purposes such an exactness would be hypercritical.]

Commercial Bismuth.

A. CLASSEN some time ago reported that commercial bismuth contained more than 1 per cent each of copper, iron, and lead. Schneider recently examined bismuth from the Saxony mines, and contradicts Classen's statement. He found very much less than 1 per cent of impurities counted together. Two analyses yielded the following results:

	a.	*b.*
Bismuth	99.791	99.745
Silver	0.070	0.066
Lead	0.084	0.108
Copper	0.027	0.019
Iron	0.017	trace.
Arsenic	none.	0.011
Sulphur	trace.	0.042

—*Journ. prakt. Chem.*, 1891, 23.

Phenacetin in Influenza.

DR. HENRY, St. Mary Cray, Kent, recommends phenacetin during the first stage of influenza. Its action, he says, is prompt and striking, so that many patients declare they have derived more benefit from the "powders" than from anything else. It rapidly cures the headache which is such a distressing symptom at first, helps to reduce the temperature, and mitigates, but does not entirely remove, the aching of the limbs, a few doses of salicylate of sodium effecting its final removal. He gives the phenacetin in 5 grain powders, repeated every four hours till the headache and other pains cease. He has used phenacetin largely in a variety of conditions, and considers it unrivalled as an analgesic. It seldom fails, it is comparatively cheap, tasteless, and, as far as he can see from a tolerably extended experience of it, it is totally free from the unpleasant after-effects—depression of heart, etc.—sometimes caused by antipyrin and other drugs of its class. Insolubility is its sole drawback.—*British and Colonial Druggist.*

Pure Phosphoric Acid.

M. NICOLAS, in *Compt. Rend.*, iii., page 974, describes a method of preparation of pure phosphoric acid in which a known quantity of pure calcium phosphate is gradually added to a slight excess of pure dilute hydrofluoric acid contained in a leaden or platinum vessel, the mixture being well stirred after each addition. An energetic action takes place and considerable heat is evolved. When all the calcium phosphate has been added, the high temperature of the mixture must be maintained for some time in order to complete the reaction. After the removal by filtration of the calcium fluoride which is formed, the solution of phosphoric acid is evaporated. At the point when the solution commences to become viscid the excess of hydrofluoric acid used is volatilized. The evaporation is continued until a thick syrup, containing 60 to 70 per cent of phosphoric anhydride, is obtained. Meta- and pyrophosphoric acids may be prepared by further continuing the evaporation and heating. The various calcium salts of phosphoric acid described by Erlenmeyer may be readily prepared by adding hydrofluoric acid to a large excess of calcium phosphate, and, after mixing well, dissolving out with warm water the acid salts produced. Impure phosphates, such as bone ash, may be used for the preparation of phosphoric acid, provided that the resultant acid, after being evaporated to carbonize the organic matters present, is diluted with water, filtered, and again evaporated.

A Few Remarks on the National Formulary.*

BY FRANCIS HEMM, PH.G.

DURING the past two years, while engaged in the work of furthering the adoption of this generally recognized guide for unofficial preparations in our State, I have met with many expressions on the part of the druggists; I will say right here most of them were laudatory and seemed to prove that not only was the National Formulary in the possession of most Missouri pharmacists, but also that it was in full force with them as well as with the physicians in their neighborhoods. They spoke of the formulas contained therein as being good and filling most of their wants, occasionally suggesting a preparation or several which are frequently prescribed, for which they would like a good working formula, to yield a good and uniform product. As a general thing they agreed that the work proved a boon to their business, appearing none too soon and filling a long sighed-for want; to rid them or at least offer some relief of the existing evil—the tying-up of a vast amount of capital—to be able to meet the demands of their patrons by keeping stocked with the endless and ever-increasing nostrums and proprietary combinations.

They are satisfied it has been a source of financial profit to them for the past three or four years and spared them many annoyances; and though there may be further room for improvement, they are very willing to abide the necessary time to accomplish this end.

Others, for some reason strange to me, have not displayed the right spirit in this matter; some have confronted me with the statement that the arrangement of the Formulary is too complicated, in many instances necessitating the making-up of three or four preparations before the one aimed at can be made.

Some claim that it is impracticable with them because they have not the required facilities, viz., the needed apparatus and ingredients to manufacture them, or because they haven't sufficient demand for these preparations to justify the outlay to put themselves in the position to supply them.

Still another class remark that they would do their share to introduce these preparations to their physicians, if I could designate to them one or several houses from which they could procure them, or, if not all the compound, at least the basic preparations.

With the view of getting these druggists in our State into line and enlisting their co-operation in the future, I have decided to present the following facts as a reply to their statements:

In answer to the first statement I desire to say that the formulas of the N. F. can only prove troublesome when the pharmacist waits with his work until he needs one or the other of the preparations in a hurry.

Every systematic man arranges himself to be in readiness to discharge his duties with the greatest ease and celerity.

If there is any one class of men who can ill afford to be devoid of system, it is the druggists.

In the preface of the book the attention is called to the fact that the compound formulas are so constructed that it becomes quite unnecessary to keep most of them ready in stock, but by keeping on hand at all times the basic preparations (which are not so numerous, nor need they be carried in such large quantities as to tie up much capital) any of the compounds can be made on short notice and in any desired quantity to meet the exact requirements; in this respect unlike the buying of a pint bottle original package of some proprietary article for the purpose of filling a prescription calling for 2 ounces, the other 14 ounces usually forming dead stock.

Now, for those who have a light demand for this class of preparations it must certainly be the very thing they want.

With the following line and quantity in stock they are equipped for the work.

I also attach the approximate cost to show how much capital is needed to make the start:

1 gall.	Elix. Adjuvans No. 25	$1 20
1 "	" Aromatic No. 31	1 15
½ "	" Cinchona No. 42	85
½ "	" " Detannated No. 44	90
½ "	" Yerba Santa Arom. No. 54	50
½ "	" Pepsin No. 81	95
½ "	" Taraxacum Compound No. 105	1 15
1 pt.	Spirit Aromatic No. 337	50
10 ozs.	Comp. Sp. Orange No. 338	1 00
10 "	Spirit Curaçao No. 340	90
1 qt.	Syr. Coffee No. 352	40
1 "	Arom. Syr. Yerba Santa No. 360	40
1 pt.	Detannated Tinct. Cinchona No. 393	75
2 lbs.	Purified Talcum No. 385 @ 15c	30
1 pt.	Solution Carmine No. 210	50
1 "	Cochineal Color No. 211	25
1 "	Tinct. Cudbear No. 407	20
1 "	Comp. Tinct. Cudbear No. 408	20
1 "	Tinct. Quillaja No. 410	15
½ "	Spirit Phosphorus No. 344	40
½ "	Comp. Spirit Cardamom No. 339	30
1 "	Tinct. Citrochloride Iron No. 297	45
1 "	Tinct. Vanilla U. S. P.	1 10
		$14 50

Besides these it requires only the ordinary fluid extracts, tinctures, syrups, oils, chemicals, and other crude material usually carried in a well-appointed drugstore.

I would therefore say, keep these basic preparations always ready and you will find it quite an easy matter to compound most of the elixirs, wines, syrups, etc., in a few moments; you will be delighted with the work.

In answer to the plea that the necessary apparatus is not at hand, I would say it requires very little and at the same time an inexpensive kind.

Funnels, percolators, graduates, flasks, mortars, spatulas, sieves, and a few more simple pieces which are generally at hand in every drugstore, constitute the necessary implements.

One can certainly have a large array of them, but it is not absolutely necessary in order to do first-class work.

Any one can afford, and profitably so, to make N. F. preparations and push them, if he has any demand at all for this class of preparations, because they can be prepared at a very low cost compared to the price of the same class of preparations which are proprietary, and especially because he is not compelled to carry but one of each kind when the N. F. is in use, while on the other hand he is often obliged to carry three or four different makes of one of the same kind of preparation.

To the third class I wish to say, the right thing to do, if you don't know how, is learn to manufacture your own preparations, and especially those of the N. F. It will make you a better and more experienced pharmacist.

* Paper read before the Missouri State Pharmaceutical Association.

But if you have not this inclination and buy, you will, I still insist, buy the N. F. preparations from your manufacturing pharmacist and push them in preference to the proprietary goods, for this reason:

You establish and confine yourself to one line; get uniformity in the State and help all of us just that much to get the preparations known and prescribed, and you will also make more money.

Ethylene Bromide.

WE give, in the following, some additional information regarding ethylene bromide, which has been recommended by Dr. J. Donath as a remedy in epilepsy, to take the place of bromide of potassium, the long-continued use of which produces untoward effects.

Ethylene bromide is in form of a light brownish liquid, having an odor recalling that of chloroform and a taste which is at first sweetish and afterward burning. It boils at 300° C., solidifies at 0° C., has the specific gravity 2.163, and contains 90.9 per cent of bromine. It is insoluble in water, but easily soluble in alcohol and oils, and is best administered in emulsion.

Dr. Donath recommends its administration in milk, his favorite formula being:

℞ Ethylene Bromide,
Alcohol..... ..... ää ♏xxij.
Oil of Peppermint... ..... ♏ij.

Of this 5 to 15 drops may be administered two or three times daily, or it may be administered in gelatin capsules, in doses of 3 drops mixed with 6 drops of oil of sweet almonds, of which two to four may be taken two or three times daily, and, according to the author, it is likewise suited for subcutaneous administration in oily solutions. The dose may be increased progressively until 70 drops are reached, the dose for adults, two or three times daily, or 10 to 20 drops for children. It should be remembered that a minim contains a little more than two drops of the ethylene bromide.

Before proceeding to the therapeutic use of this substance, Dr. Donath tested it on himself, and found that in ordinary therapeutic doses it produced no evident effects whatever in a healthy individual, and only in very large doses did it cause some nausea. Most of the cases of epilepsy in which he tested its therapeutic power were cases of long standing, which had for years been under the influence of potassium bromide. Twenty-one such cases were treated, but only notes of ten are referred to in detail, as the others were under observation too short a time to attempt to form reliable conclusions.

This substance should not be confounded with the bromide of ethyl, the anæsthetic, which has the formula C_2H_5Br. Ethylene, or olefiant gas, has the formula C_2H_4, and originates when alcohol is heated with concentrated sulphuric acid. Ethylene unites with two atoms of bromine to form a chemical compound analogous to ethylene chloride ($C_2H_4Cl_2$), which, under the name of Dutch liquid, was for some time used as an anæsthetic.—*Pharm. Post* and *Ther. Gaz.*

New Russian Pharmacopœia.

THE fourth edition of this pharmacopœia is now in press, and will in a short time be officially notified to be in force. According to the *Pharmaceutische Zeitschrift für Russland*, the essential distinction between the new pharmacopœia and its predecessor consists in the tests for the medicines and the apparatus to be used in performing the tests. Of the 1,026 articles in the third edition 318 have been discarded and 100 new articles introduced, so that 808 now appear. Amongst the new articles are acetanilide, adeps lanæ, ethyl bromide, agaricin, amylene hydrate, antipyrin, arbutrin, charta sinapisata, chrysarobin, extracta fluida (condurango, Rhamni frangulæ. R. purshianæ, and Secalis cornuti), guaiacol, iodol, menthol, naphthalin, naphthol, paraldehyde, phenacetin, pyridin, resorcin, salol, sulphonal, thalline sulphate, urethane, vaseline, as well as Paraffinum liquidum et solidum, and new salts of inorganic and organic bases which have come into prominence of recent years, and several vegetable drugs, such as ergot *sine oleo*. Aconitine and digitalin are amongst the omissions.—*Chem. and Drugg.*

A New Absorbent of Oxygen in Gas Analysis.

PROF. L. L. DE KONINCK has discovered a new agent for absorbing oxygen gas promptly and completely from gaseous mixtures, such as air.

Believing that the use of a *ferrous* salt would accomplish the object better than any other substance, it remained to prepare an *alkaline* solution of a ferrous salt. This was finally accomplished by means of an alkali tartrate. The new reagent is prepared in the following manner:

Three different solutions are made, each measuring 100 C.c.; the first (A) containing 40 Gm. of crystallized ferrous citrate; the second (B), 30 Gm. of Rochelle salt; and the third (C), 60 Gm. of commercial caustic potassa.

These solutions must be mixed in a special manner, viz., 1 volume of A is poured into 5 volumes of B, causing a copious, whitish precipitate of ferrous tartrate. Next 1 volume of C is added, which causes the precipitate to redissolve.

The resulting solution is light yellowish, and when exposed to the air turns green in consequence of the formation of a ferroso-ferric salt. A perfect ferric salt is also clear.

The proportions given have been reached after some trials, from which it appeared that too small a portion of tartrate produces a dark or even a turbid solution.

If used in a double Hempel's pipette for the analysis of air, by means of the Hempel-Winkler burette, graduated in fifths of a cubic centimeter, the results showed, as a means of four experiments, 21 per cent of oxygen.—After *Chem. News*, vol. 64, 45.

Pharmaceutical Notes.

A FINE *elixir of phosphates of iron, quinine, and strychnine* can be made by the following formula:

℞ Quinine Sulphate	...128	grains.
Iron Phosphate Scales	256	"
Strychnia	2	"
Alcohol	2	ounces.
Water	2	"
Glycerin	2	"
Elixir Orange	q. s. 16	"
Solution Soda	q. s.	

Dissolve the strychnine in the alcohol, and the quinine and glycerin, and dissolve the quinine by aid of heat, then add sufficient elixir orange to make 14 ounces. Dissolve the iron phosphate in 2 ounces water by aid of heat. Mix with the elixir and neutralize with sufficient liquor soda.

This makes a nice permanent elixir, and by neutralizing the finished elixir instead of the iron solution a much nicer appearing elixir is produced.

The *oleate of mercury* made by precipitating solution of nitrate of mercury with solution of oleate of potassium is a much superior article to the U. S. P. product. A sample made by the writer six months ago is yet in a perfect state of preservation. This is a 28-per-cent oleate, and can be diluted as wanted.

By following the process of the National Formulary for making *extract licorice purified*, and evaporating the solution to seven-eighths of the weight of licorice used, and adding one-eighth the weight of alcohol in which 10 grains salicylic acid for each pint of finished fluid have been dissolved, a very excellent *solution of licorice* is produced. It keeps well, is cheaply produced, and for making syrup licorice or elixir, or for mixing with cough mixtures, is vastly superior to the fluid extract.

For making *iodine, belladonna*, and also for *stramonium ointments*, I have found petrolatum to yield a much nicer preparation than benzoated lard. And it appears to be equally as good medicinally, while pharmaceutically there can be no comparison between the two products.

For making *ointment oxide of zinc* I have found nothing to work so well in my hands as grinding through a small paint mill. This makes an excellent preparation, and much superior to any I have made by any other process.

In the preparation of *green soap* the proportions given

in the National Formulary yield by a modified process a very excellent soap. The potash, water, and oil are mixed in a suitable vessel and heated continuously, adding alcohol in small proportions until saponification is complete. Add water from time to time to make up for evaporation. The alcohol hastens saponification; the product resembles honey in appearance and is very fine.

In pharmacy there is nothing more useful than a good pharmaceutical still and condenser. The necessity of every pharmacy having a good supply of fresh distilled water is recognized by everybody, and it is a fact that cannot be denied that *aromatic waters* are best made by distillation. The use of a still is absolutely necessary if a druggist would make fluid extracts economically. There are dozens of pharmaceutical stills in the market for the druggist to choose from, and the makers of each claim some particular advantages for their stills. It seems that in their haste to bring out some new form of condenser they have forgotten the old Mitscherlich condenser. The works of neither Remington nor Parrish illustrate or speak of it; yet in the opinion of the writer it is one of the very best forms of condensers known. It has a very large condensing surface, does its work rapidly and well, can be easily taken apart and cleaned, and is so simple in construction that any ordinary tinsmith can make one. This condenser is illustrated in Proctor's "Lectures on Pharmacy," and Mohr and Redwood's work on the same subject. I prefer one about 24 or 26 inches long and about one-half inch space between the two condensing surfaces. In my experience I have found a condenser of this size to leave but little to be desired, as far as a condenser is concerned.

If some manufacturing house would put a small *porcelain straining frame* on the market suitable for the prescription department, it would be certain to command a large sale. Many druggists have them made of tin, but tin is objectionable owing to its being liable to be acted on by chemicals, while porcelain would be entirely unobjectionable.—F. EDEL in *Pharm. Era.*

The Manufacture of Oil of Birch.

A PROFITABLE industry, and one of which but little is known to the world at large, is carried on among the hills of New England. It is the manufacture of oil of birch, and five years ago it was an industry that paid the limited number of men engaged in it a very handsome return for their labor; but the placing upon the market of an adulterated oil has cut down the price of the pure article, and now the manufacturer fails to realize the liberal reward for his labor that he did formerly.

Oil of birch has a market value as a flavor. It is used largely in the manufacture of confectionery, and is sold almost invariably under a label that calls for the essence or oil of wintergreen. [The original paper states here that pure essence of wintergreen does not exist. This is a mistake. It not only exists, but is also manufactured in various localities. Only, since oil of birch possesses the same wintergreen flavor and is more abundant, most of the former is used as a substitute for genuine oil of wintergreen.—ED. AM. DRUGG.]

The manufacture of pure oil of birch is now confined to the State of Connecticut, where there are eight mills now in operation. Ten years ago the industry was known only in Pennsylvania, and all the oil of birch marketed passed through the hands of one wholesale drug firm in Philadelphia. . . .

Ten years ago hardly anything was known of the manufacture of oil of birch outside of Pennsylvania, and the secret of clarifying the oil was known to only a very few. About that time Rev. Tom Dickerson, of Essex, Conn., saw an opportunity to turn the vast forests of birch that crown the hills of New England into profitable use, and he sent his son to Pennsylvania for the purpose of learning the process of manufacturing the oil. The son secured a position in a birch mill, where he worked eighteen months, and during that time he had got an idea of how the work was done, and he managed to learn what chemicals were used in clarifying the oil. With this knowledge young Dickerson returned to Connecticut and engaged with his father in the manufacture of the first oil of birch ever extracted east of the Keystone State.

The first birch mill was built at Joshuatown, a dilapidated hamlet on the Connecticut River, nearly opposite Essex, and there Tom Dickerson & Son began the work that in three years gave them both an independent fortune. The success of the shrewd minister stirred the blood in the veins of some of the observing Yankees, and within two years there were six birch mills in operation within a radius of ten miles of Joshuatown, and this number has increased to eight. Although the clarifying of the oil is not an open secret, it is known to a large number of men who are engaged in the business.

With a capital of twenty-five hundred dollars a man can set up his plant and begin the manufacture of oil of birch. The best and most profitable mills are equipped with six water-tight wooden tanks, about 6 feet square. In some cases these tanks are so built that a fire may be set under them for the purpose of boiling the water they contain. These tanks have copper bottoms. In many of the mills the work is done by steam, and in such cases there must be a furnace and boiler, and a coil of steam pipes is laid in the bottom of each tank. With tanks, pipe, boiler, a few glass jars, and a good supply of fresh, cold water, the manufacturer is ready for business.

The farmers are paid three dollars a ton for birch brush that must not be more than 2½ inches in diameter, and the only variety of birch used is the black, mountain, or sugar birch. From the yellow and white birch no oil can be obtained.

If the farmer does not live more than six miles from the mill, he can, by working early and late, manage to cut and haul to the mill 1 ton a day. This, to the average New England farmer, is very profitable work, and the building of birch mills in their midst has been of great benefit to a large number of them. Many of these men who have birch to sell are not so favorably located as others. There are many men who drive a slow-going ox-team to the mill with but half a ton of brush, and the distance that they travel going and coming is more than twenty miles. Their compensation for the day's labor of three yoke of oxen and themselves is $1.50, but these men are satisfied with that, and in most cases their farms are clear of mortgage and they are not indebted to the village storekeeper.

The brush is chopped into pieces of from 1½ inches to 5 inches long by a heavy machine built with heavy knives, on the principle of a hay cutter. One ton of brush can be run through a cutter in an hour, if kept steadily running.

These short pieces are thrown into the tanks, in which about a foot and a half of water has been placed; the fire is then built, or the steam turned on, and the water set a-boiling. While the water is being heated, the covers of the tanks are shut and "plastered" or sealed around the edges with rye flour paste. This is to prevent the steam from escaping.

The water in each tank is kept at a boiling point six hours, at the end of which time the birch is exhausted.

Entering each tank near the top is an iron pipe, through which the steam escapes and passes through a coil placed in a barrel that is kept full of running water. In this manner the steam is condensed and drops into a glass jar, placed under a pipe at the bottom of the coil, for its reception.

Oil of birch in a pure state is much heavier than water. Thirteen fluidounces weigh a pound, and instead of rising to the top of the condensed steam, it settles to the bottom of the jar, where, in its action when the jar is moved, it very much resembles quicksilver.

In its crude state the oil is of a copper hue. If boiled in tanks with copper bottom, or if cooked over a steam coil, it is of the darker hue of iron. The most popular and the cheapest method of "clarifying" the oil is as follows:

The oil in its crude state is poured upon a woollen blanket that is then laid upon the top of the brush in a tank. The covers are "plastered" down and the water set a-boiling. The steam passes through the blanket, which "absorbs the particles of copper and iron" [so the original paper states; we need not say that this is highly improbable.—Ed. AM. DRUGG.], and the oil drops into the receptacle at the bottom of the worm, of a hue that is very light green or like the essence of lemon. "Clarifying"

the oil by the use of chemicals is much more expensive and generally less satisfactory.

A tank 6 feet square will hold a ton of brush, and each ton yields 4 pounds of oil. The mills are run, during the season, night and day, and each tank is filled three times. The daily product of a six-tank mill is about 75 pounds of oil per day. Five years ago the oil brought $3.15 a pound readily, but now the price is $1.50 a pound, but even at this reduced figure the birch oil manufacturer is able to pay his running expenses and make a neat income besides.

The product of the eight mills in Connecticut is handled by one firm in Essex, Connecticut. The mills do not run during the summer, because of the trouble of preparing the brush for the cutter, it being necessary to remove the foliage. The season opens about the first of October and the mills run until the last of April.—After *Scient. Amer.*, June 13th.

Elderberry Juice as an Indicator.

THE expressed juice of the fruit of *Sambucus Canadensis*, or elder, has a garnet-red color when neutral or acid, but turns green when alkaline. This property led to some experiments by the author as to its value as an indicator in volumetric analysis. These experiments show the elderberry juice to be not only superior to litmus for any titrations, but equal in efficiency to rosolic acid as an indicator in the estimation of ammonia or phosphoric acid. When the indicator is first added to ammonia, the color is a "muddy" blue, becoming clearer and of a pea-green color as the acid is added from the burette. This green is brighter and more distinct as the final end to alkalinity approaches, and, when a drop of acid is added in excess, instantly becomes a garnet-red color. This turn of the indicator was exactly at the number of cubic centimeters required to turn rosolic acid yellow, while phenolphthalein gradually faded out at a few tenths cubic centimeters more.

In titrating the precipitate of $MgNH_4PO_4$ by Stolba's method, the red color appears at just twice the cubic centimeters of HCl required to turn rosolic acid yellow. If the precipitate is dissolved in HCl and the excess measured back by NaHO, the green appears at just twice the cubic centimeters required to turn rosolic acid red. At the point where rosolic acid just turns red, elderberry juice has a violet color. Then, when the formula is Na_2HPO_4, the elder juice is green, and is not restored to red till the formula is H_3PO_4. The final point is more distinct when the $MgNH_4PO_4$ is dissolved in excess of HCl and the acid measured back by the NaHO. The author is engaged on further experiments in regard to the action of this substance with phosphates, to determine its practical value.

In titrating carbonates, a bluish-violet appears at the point when phenolphthalein is just decolorized (without heating), and changes to red at the same point that methyl orange is turned red. The change of color is not very distinct, depending on keeping the solution at a constant temperature.

These experiments were made with elderberry wine carefully neutralized with NaHO. The fresh juice may be preserved by addition of one-fifth of its volume of alcohol. The author finds it quite efficient in all titrations, unless it be acetic acid, when the colors seem so pale as to be rather indistinct.—CLAUDE C. HAMILTON, M.D., in *Meyer Bros'. Druggist.*

Wither's Antizymotic Solution is reported by Mr. Otto A. Bierbach, in a paper read before the Oregon State Pharmaceutical Association, to contain the following ingredients:

Mercuric Chloride	0.207 parts.
Aluminum Chloride	0.084 "
Zinc Chloride	0.048 "
Potassium Chloride	0.087 "
Sodium Chloride	0.788 "
	1.214 "
Free Hydrochloric Acid, in 100 parts of the solution	0.060 "

—After *Pacific Drug Review.*

American Druggist

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EDITORIAL.

DEATH DURING CHLOROFORM NARCOSIS.

TWO deaths from chloroform which recently happened at the Manchester Infirmary have created much stir in the British professional press. As is well known, our English confrères, like those in Germany and some other countries on the Continent of Europe, generally prefer chloroform to ether as an anæsthetic, in spite of the fact that the former has produced more accidents than the latter. It is, however, considered more efficient and prompt, and less frequently accompanied by disagreeable after-effects. The question now agitates the profession whether these deaths were due to some impurity in the chloroform, and speculation is rife as to whether "methylated" chloroform (that is, chloroform not made from alcohol, but from "methylated spirit," on which the internal revenue tax is saved by the manufacturer) has been employed. This kind of chloroform has generally been regarded as being less pure than that made from pure ethylic alcohol. The methyl base, during chlorination, is believed to be partly converted into chlorinated compounds which cannot be entirely removed, and which render the product dangerous. It must be stated, however, that the nature of these compounds has not been made out, and that their toxicity is not proven. Moreover, there are many deaths on record caused by chloroform assuredly made from pure ethyl alcohol and carefully purified before being administered.

We cannot help believing that many of the recorded deaths from anæsthetics were not so much due to an impurity present, but to other causes, such as faulty or careless administration; the presence of particular lesions or functional disorders of the respiratory organs or of the circulation in the patients; or, finally, to the fact that chloroform as well as ether may act as a poison, under unfavorable conditions, even when there is not the slightest impurity revealed by the most searching tests.

THE trouble with the retail drug trade of to-day may be traced entirely to the fact that the trade in proprietary goods has been developed upon faulty lines. If the same course had been pursued with these as has been followed in the case of most other proprietary articles in other trades, no such trouble as is now experienced would have existed; there would have been nothing like the present number of patents, and instead of the retail pharmacist being, as now, at the mercy of the manufacturer, the situation would have been completely reversed. In his effort to advance the professional relations of pharmacy the retailing apothecary has ceased to be as good a trader, and has not quite kept up with the changes and developments in the business methods of the community. The result of attempting to carry on his business in unbusiness-like ways has quite naturally been disastrous, and there can be but one method for correcting the trouble, and that is to return to the business methods adopted by others and sanctioned by law and custom.

Let us consider how other proprietary goods are handled. John Doe is the owner and manufacturer of a patented hay rake. He does not expect every country store keeper to promote his business interests and the sale of his rake as a matter of good-will or without sufficient pecuniary consideration to make the business profitable. Does the country store keeper sign a contract not to sell the rake for less than his neighbor? Not if he knows it; but he holds a contract signed by John Doe, in virtue of which he has the *exclusive* sale of that rake in that locality, and agrees only to keep a stock on hand and not to charge *more* than a specified price for it. John Doe, on the other hand, accepts the obligation to protect the retailer in his *exclusive right* to the sale of that rake in *that territory*. Such contracts are recognized by law and custom, and are the ones which control the handling of pretty nearly all patents excepting proprietary medicines. The present faulty system has made the retailing apothecary the catspaw for the manufacturer's chestnuts, and has done more than anything else to bring the manufacture and sale of this class of nostrums to its present proportions. Any attempt to improve the trade in this particular, short of accepting and practising the business methods of other dealers, must prove utterly worthless. If you think there is a chance to make a profitable business out of the sale of somebody's "sarsaparilla" in your town, pay him something for the privilege of handling it, and take his written contract that he will furnish it to no other dealer within a specified territory, nor allow other dealers in adjoining territories to supply it. Then you have some sort of hold upon your business which people of ordinary intelligence will understand; and when you want to sell out your stock and good-will you have something tangible to dispose of, and the courts will help you defend your proprietorship. As it is now, you are doing business at your own risk for another man's benefit, and if you venture to protect yourself by the measures the "other man" has been proposing of late, you will discover that they are either contrary to law or protect only the other man.

Jules Leon Augustin Creuse, a graduate and member of the College of Pharmacy of the City of New York, formerly connected with the editorial staff of the *Druggists' Circular*, and for some years a resident of his birthplace, Paris, died on August 13th, as we learn with sorrow from his relatives just before going to press.

NEWS AND NOTES.

ENGLAND.

THE annual meeting of the British Medical Association has just taken place at Bournemouth. The attractive features of this popular southern health resort accounted for the attendance of some seven hundred medical men. In connection with this, a word about the Association will explain its importance to the medical profession of this country, and indirectly to pharmacy. The Association was established some sixty years ago, and has steadily grown in numbers, wealth, and importance, until now nearly half the medical men upon the register belong to it. It has upwards of 13,800 members and an annual revenue of $159,075. The chief advantage offered by membership is the copy of the *British Medical Journal*, the official organ of the Association, the editor of which is Mr. Ernest Hart, F.R.C.S. Each year the Association holds its annual meeting in one of the large towns of the United Kingdom, but there are local branches in nearly every district, whilst at the London headquarters is a good library, etc. Like other scientific bodies, it makes large grants of money for investigations annually, and yet has succeeded in accumulating over $200,000.

A president is always chosen from the medical men of the town or district visited, and Dr. J. R. Thomson, of Bournemouth, occupied the chair this year. His inaugural address was partly eulogistic of the climate of his town and also of the advance made within recent years in sanitary science.

Of chief interest to druggists is the annual museum which accompanies the visit of the Association. In this museum are concentrated the exhibits of all the leading wholesale druggists who appeal specially to the medical profession. A short description of the manner in which we do this sort of thing may interest the readers of the AMERICAN DRUGGIST. Space has to be paid for at the rate of about fifty cents per foot lengthways, the exhibit being allowed to go up as high as the building can accommodate. Counters are usually covered with blue or red baize, and the pharmaceutical and chemical exhibits displayed in cut-glass bottles of every size and shape. Amongst those who exhibited were Allen & Hanbury; Corbyn, Stacey & Co.; Liquor Carnis Co.; Macfarlan & Co., of Edinburgh; Thos. Christy & Co.; Hewlett & Son; Burgoyne & Co.; Burroughs, Wellcome & Co.; Hoff, of Hamburg; Oppenheimer & Co.; W. R. Warner & Co.; Richardson & Co., of Leicester; Parke, Davis & Co.; Seabury & Johnson; Warrington Chloroform Co., etc. Space will not admit of even a passing notice of the specialties with which these firms are associated, but a few words about two or three of the exhibits will give some indication of the others.

Burroughs, Wellcome & Co., of Snow Hill, London, always come to the front on these occasions. Some thirty feet of counter space was covered with the specialties of this firm, whilst Mr. Burroughs himself was actively superintending the efforts of three or four travellers that he had with him in drawing the attention of medical men to their products. Of course, "tabloids," or compressed tablets, were important features, and special arrangements were made for the exhibition of their disintegrating properties. It may be mentioned here that some rivalry has taken place between this firm and another later arrival in the same field on the subject of "disintegrating" tablets. Soon after the announcement in the pages of the AMERICAN DRUGGIST that many tablets passed through the internal economy of patients unaltered, and that this could be remedied by the addition of a more soluble body, such as sulphate of soda, sugar, etc., to the pellet, Allen & Hanbury took up the idea and freely advertised their compressed goods as disintegrating "tabellæ." B., W. & Co. were not far behind in pointing out that several years ago, by carefully regulating the pressure, they had obtained the same results. Amongst the novelties was an inhaler designed by Sir Morell Mackenzie. It consists of spirit lamp, an oil or glycerin bath surrounding a small hot-air chamber in which is placed a thermometer and sponge with inhaling tube. It is evident that with little direction the patient can undertake a long course of treatment by this means, and the temperature

of the hot air efficiently regulated. The firm have also introduced a new chloride of ammonium inhaler, consisting of an earthenware pipe, closely resembling in form a tobacco pipe, divided in the bowl. In one part is placed a piece of sponge saturated with ammonia, in the other pumice-stone is steeped with hydrochloric acid.

Hewlett & Son, Charlotte street, London, had a handsome exhibit of pharmaceutical specialties. The counter was partly covered with mahogany and glass-mirror steps, with mirror background. On these steps were displayed cylindrical bottles with cut-glass stoppers, each about two feet high and labelled with black letters on enamel-white background, with gold border, the whole being moulded into the glass. In these were such old friends as Easton's syrup, Parrish's syrup, liquid extract of cinchona, solution of coal tar, terebene, etc. Immediately in front were samples of concentrated mixtures from their own formulas or those of the London hospitals, which are prepared for the special convenience of doctors with club practice, for whom dispensing has to be made easy. A good display of pearl-coated pills in glass bottles was also shown, amongst which were Sir Andrew Clarke's anti-constipation pill, with the following composition: Aloin, ¼ grain; Ferri Sulph., ½ grain; Ext. Nucis Vom., ¼ grain; Pulv. Saponis, ½ grain.

Directly in front on the red baize cloth were specimens of new synthetic remedies in flat dishes with their glass covers. Aristol, piperazine, phenocoll, hypnal, orexin, etc., were amongst those shown. Other novelties were antiseptic jellies and pellets. The jelly was scented with otto and contained 1 part per 1,000 of corrosive sublimate put up in collapsible tubes. The pellets are also corrosive sublimate, delicately colored to prevent accident, and intended for the rapid preparation of antiseptic solutions of definite strength.

Seabury & Johnson's exhibit was a colossal proof of the hold that antiseptic dressings, bandages, and plasters have taken upon the profession. Over all, surrounded by small flags of international variety, was a large portrait of "George J." The Viburnum Compound was also strongly in evidence through the enterprise of the New York company. So were also Upjohn specialties.

Amongst the American visitors to the meeting were Dr. Avery and Dr. W. M. Polk, of New York.

A complaint was signed by all the exhibitors of drugs and chemicals against the permission of bootmakers, etc., to display their wares side by side with the druggists. A similar objection was lodged several years ago against the display of sanitary drain pipes and other interesting but slightly unsuitable objects in the same part of the museum, and the committee promptly arranged a sanitary appliances' exhibition by itself in another building.

London Market Report.

MINCING LANE, August 9th, 1891.

Business has been exceptionally dull both in the chemical and drug markets during the last month. Prices, however, are fairly maintained. Changes are talked about in the directorate of the Chemical Union, and have already depressed the shares somewhat. There are no immediate signs of opposition, and Union rates are held. Advices from Smyrna indicate lower prices and fair demand. Quinine remains unaltered.

The following are current prices:

Acid, citric.....	per lb., $0.40	Aloes, Cape.....	per lb., $0.06
Tartaric.....	" .28	Balsam of Peru,	" 1.66
Oxalic.....	" .07	Buchu leaves...	" .11
Bleaching p'wd'r	per cwt., 1.90	Colocynth.....	" .28
Copper Sulph.....	" 3.25	Ergot, Spanish..	" .40
Cream of Tartar,	per lb., .20	Ipecacuanha....	" 1.90
Mercury.....	" .48	Morphine Mur.,	per oz., .80
Calomel.....	" .76	Codeine.....	" 2.44
Corrosive Subl.,	" .60	Opium.....	per lb., 2.0 to 2.4
Potash, Chlorate,	" .11	Shellac, TN.....	per lb., .20
Bichromate.....	" .08	Button.....	" .22

CANADA.

I SPENT a few days last week running around the country visiting some of my old pharmaceutical friends. The majority of them were complaining of very slack times. A few of them at watering places and summer resorts, or on the line of traffic, were keeping up to their average, but the greater number were doing little more than paying expenses. However, they look confidently forward to a good fall trade. The expected European demand for wheat and the abundant crops in Canada are making farmers jubilant, and, as everything springs from the soil, we expect to feel the favorable effects.

In my peregrinations I witnessed an amusing occurrence. One of our large city druggists (expressive, if ungrammatical) recently signed a new hand. This latter was a young man endowed with all the peculiar restless proclivities of youth. One day, while putting the head clerk through his shorter catechism—a process all we who have acted in the latter capacity are fully acquainted with—the embryo chemist came across a bottle of Dolichos pubes. (Dolly-kus poobs he called it), and was warned of the irritating properties thereof—a very rash proceeding on the part of the head clerk. There is a confectionery and fruit store next door and a newspaper office a few doors up, all using the same "back yard." The fruiter is in the habit of leaving crates of partly decayed fruit in the yard until a "load" accumulates. The newsboys take excellent care of this refuse fruit. One day, while about a dozen of them were picking over the fruit, James put a small portion of cowhage in each of his fingers, and, under the pretence of picking amongst the fruit, contrived to sprinkle the irritating powder over the hands and the back of the necks of the newsboys, and retreated to watch developments. The plot matured in due time, and before long the store back and front was guarded by a scratching, cursing, angry mob of newsboys. They, or some of their fraternity, stood on guard all day. James went without his dinner, had his tea sent down to him, and slept all right on a pile of old coats on the dispensary floor. And, as the saying goes: "It is an ill-wind," etc., it is a noticeable fact that it takes James just about half the time to go a message that it did before the occurrence.

Our town (Hamilton) is *en fête* this week. The Saengerfest is being held. The town is swarming with Germans, and the air thick with gutturals. There is a procession of beer wagons from the two lager breweries from early morning till late at night. Wine clerks and policemen are working full time, although for the crowd and excitement I never saw so sober and quiet a lot of people. Hawkers of souvenir badges, penny whistles, and "buzzers" are playing to full houses. By the way, this week witnesses the introduction of the phonograph as a street show. There are about a dozen in different parts of the city. It is amusing to watch ten or twelve of our most staid and sober citizens standing around a peculiar-looking wooden box from which run two rubber tubes to the ears of each of the audience. All at once they appear to be interested, and suddenly they fall into a paroxysm of laughter as some witty speech or "laughing song" is ground out of the instrument. They are doing a thriving business.

The first meeting of the newly elected council of the Ontario College of Pharmacy was held in Toronto on the afternoon of August 4th and three following days. There were present Messrs. Hall, Clark, Slaven, Petrie, Polson, Jordan, McKee, Lawrence, Mackenzie, and Buchanan.

Mr. J. J. Hall was elected president, Mr. J. W. Slaven vice-president, and Mr. T. T. Lewis registrar. A message was read from Mr. G. S. Hobart asking a recount of the ballots of the recent election, and enclosing twenty-five dollars for the expenses in connection therewith. Referred to committee.

The president, Mr. Hall, spoke at some length on the work which would engage the council during the next two years. The practice of pharmacy was passing through an important crisis; there was danger of the retail pharmacist "being ground between the upper stone of high-priced, lightly palatable, mystic formula, free-sample, loudly advertised nostrums and ready-made prescriptions of the manufacturing chemists, and the nether stone of the rapidly ascending and cut-rate wholesale and retail price of patent medicines of the modern carry-all stores." There was danger of the therapeutical effects of drugs being lost or obscured in an effort to please the senses, and of chemists and medical practitioners being relegated to the level of shopkeepers for the sale of manufacturers' wares.

The reports of the Executive and Finance committees showed the affairs of the college to be in a prosperous condition.

The day following the report of the Committee on Education was read by Mr. Mackenzie. The interest in this report centred in the application of Mr. J. C. Perry for registration on an American diploma similar in character to that presented by Mr. Petrie, who claimed registration on a diploma obtained in Philadelphia after he had failed in the junior examinations at the Ontario College of Pharmacy. Neither the Philadelphia College nor the State of Pennsylvania will recognize the diplomas of the Ontario College, and the State Board will not recognize any diplomas even of its own college. Therefore it was claimed that this one-sided arrangement was hardly the fair thing. However, after much discussion, not conducted in as amicable a spirit as it might have been, the majority decided to adopt the report of the committee in favor of accepting the American diplomas.

It was decided to continue negotiations with the Quebec council with regard to reciprocity in diplomas, and to engage a detective to assist the registrar in attending to those members who are in arrears.

The meeting altogether was much more peaceable than was anticipated. Beyond some heated discussion, perfectly justifiable when such important subjects are in hand, and a few windy and witty passages between Mr. Polson and the president, there was nothing that would call for interference on the part of the Police Department.

CHICAGO.

DR. MARR has removed his store from 56 North State street to 238 on the same street.

ELKIN & MATKIN have opened a new store at the corner of Van Buren and State streets. It is one of the most elegant of the down-town pharmacies, and the proprietors evidently intend to make a success of it.

On one of the recent Sundays a somewhat unusual scene was enacted in the pharmacy of Rimmele & Hiss, located at 2459 Wentworth avenue. A gang of hoodlums numbering about a dozen entered the store with the intention of "doing up" one of the proprietors. With the assistance of an unloaded revolver and several chairs, the members of the firm and clerk held the rowdies at bay and finally repelled them. Fortunately the only damage done was the breaking of a few shelf bottles.

THEO. R. BEHRENS has been quite ill with typhoid fever, but is now able to be about.

HAND & BRITTON have purchased the Oakland Pharmacy, located at Cottage Grove avenue and Oakwoods Boulevard, of Miller & Miller.

JOHN RITTER has disposed of his pharmacy on Colorado avenue.

BACHMANN & MILLER succeed J. F. Bachmann at Halsted and Taylor streets.

GEO. F. WISSHACK has opened another pharmacy at La Salle and Washington streets.

OTTO WOCHER has opened a new pharmacy at 55th street and Jefferson avenue.

J. G. SCHAAR, the pharmacist located so long at 649 Blue Island avenue, is now cashier of the Industrial Bank of Chicago, recently established at Blue Island avenue and 22d street.

The annual report of the Alumni Association of the Chicago College of Pharmacy is well under way and will soon be issued. It is in the hands of a publication committee consisting of E. K. McPherson, R. C. Frerksen, and A. E. Hiss.

FRANCIS M. FOX, of 3199 Archer avenue, is another pharmacist who has been honored by a political appointment. He is the health commissioner of his district.

About fifteen of Chicago's pharmacists went to Milwaukee on the 12th inst. to attend the meeting of the Wisconsin Pharmaceutical Association.

A correspondent of the AMERICAN DRUGGIST recently paid a visit to the laboratory of the Searle & Hereth Manufacturing Co., and was shown through every portion of the establishment by the genial manager, Professor Frank S. Hereth, who is also director of the pharmaceutical laboratory of the Chicago College of Pharmacy. Everything was in neat and orderly condition, and a large force of employees was seen at work at the various operations incident to a manufacturing laboratory.

CHARLES L. FELDKAMP has disposed of his store, located at Division and North Clark streets.

DR. EDWARD OTTO is the defendant in a divorce suit brought by his wife on the grounds of cruelty and adultery. Mrs. Otto was the widow of Dr. Matthei when she married the defendant in 1887, and claims that she was obliged to purchase groceries, clothing, etc., out of the money she received from the insurance on her first husband's life. Dr. Otto is the proprietor of pharmacies located at 115 Clybourn avenue, 875 Milwaukee avenue, and 260 North Market street.

KANSAS CITY.

A DEPARTMENT house of Kansas City, one of the largest and most influential west of the Mississippi River, has determined to put in a drug department. Unless their intended action can be frustrated, the retail drug business of our city will be seriously injured. The Kansas City Pharmaceutical Association desires to nip this bud in its incipiency, if possible. A committee appointed at the last meeting have written letters to the wholesale druggists of the United States, asking them, in the interest of the retail druggists of Kansas City, and also in the interest of the retail druggists of the whole country, to refuse absolutely to furnish this house any goods in the drug line. The retail druggists of Kansas City have for several years been, and are still, standing solidly together in the matter of prices and other affairs of business and common interest.

SCHOAN BROS'. drug store at Fifth and Wyandotte has passed into its former owner's hands again. Louie Schoan has bought it from Woodbury Bros., who purchased it at sheriff's sale several weeks ago.

H. M. HUTTON has removed his store to 23d and Prospect avenue. He is now in a locality much in need of a drugstore, and is sure to do a thriving business.

C. G. NICKOLLS has removed his store to 15th and Flora from 14th and Lydia.

R. J. HOLMES has opened a new store at Ninth and Prospect, with new building and new fixtures—all his own.

CASTLE BROS. have removed their drug stock from Sixth and May to 12th and Charlotte. Wingate Jackson is clerking for them.

FRANK WARREN SWOPE, Ph.G. (class '90-'91), and Miss Hannah Babcock were married Wednesday morning, July 15th, at the residence of the bride's parents, No. 1712 Jarboe street. Rev. Reese, of the Dundee M. E. Church, officiated. Only immediate friends of the family were present. They left at once for a trip through the southern portion of the State. Mr. and Mrs. Swope are now at home at 1626 Summit street.

MR. DENNISON, of Wamego, Kan., has purchased the drugstore of Mrs. D. S. Jacobs at 14th and Penn. James Howard will have charge under the new arrangement, which is sufficient guarantee that the store will have a big trade.

MR. MARSHALL, who has been the chief clerk for Doyle at 15th and Campbell, has returned to Pennsylvania, his native State, where he will enter the drug business for himself.

J. T. RAGLAND (class '90-'91) has been seriously ill for several weeks and we are glad to learn of his recovery. He has resigned his position with Beck & Swearingen and returned to his home in Marshall, Mo., to regain his health. We learn that he then contemplates seeking his fortune in old Mexico.

BECK & SWEARINGEN have consolidated their stores into one and located at Sixth and Walnut streets, just opposite their old quarters. They have always enjoyed a paying trade at both their old stands, Sixth and Oak and Sixth and Walnut streets, and with such bright prospects before them are sure to be successful in their new store.